THE LAW RELATING TO FACTORIES

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THE many evils in which the early factory acts had their origin have long since passed away, and even a knowledge of these is likely to be forgotten by the present generation. In these days, progressive employers recognise that the provision of the best conditions and equipment in their factories is not only just and humane but also essential, if the highest manufacturing efficiency is to be obtained. Hence, the conditions in their factories are often in advance of any legal requirements and, in view of these voluntary efforts, some persons are inclined to question the necessity for factory legislation.

Although this country has been fortunate in having many great leaders in industry who have done much for the safety, health and welfare of their employees, there have been others who through ignorance, indifference and greed have caused much suffering and hardship to their fellow men. It may be said that the various factory acts have generally been the result of public opinion trying to compel the unsatisfactory and indifferent employer to bring the working conditions in his premises up to the standards of those provided by the best employers and incidentally protecting the latter against one kind of unfair competition by the former.

The first law enacted with the object of regulating the period of labour in factories was the so-called " Health and Morals Act " of 1802. This act may be regarded as an extension of the old Poor Law. By the Elizabethan Poor Law, orphans and indigent children were apprenticed to the parishes to which they belonged and were to be employed there or elsewhere at the discretion of the parish authorities, who were paid a fee by the masters to whom the apprentices were bound.

These parish apprentices afforded the main source of juvenile labour for which there was an increasing demand in the cotton and woollen mills, which were being established in Lancashire

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and Yorkshire at the time of the Industrial Revolution towards the end of the eighteenth century. The story of the parish apprentices is a truly appalling one. The mill-owners collected such apprentices from the overseers of the poor in various parts of the country. Many of these boys and girls were under ten years of age, some only seven years. They were housed, in the majority of cases, under disgusting conditions near the mills, and indifferently fed and clothed by the masters.

An epidemic fever which spread throughout the factory district of Manchester, caused havoc amongst the young workers and drew attention to the conditions of their employment. As a result, the Factory Act of 1802 was passed. Amongst its provisions were the following :—

The rooms were to be washed with quicklime and water twice a year, and care was to be taken to admit fresh air. Apprentices were to be provided with two complete suits of clothes per year, were not to work more than twelve hours per day (exclusive of meal times) and were not to work at night (except in certain cases). They were to be instructed in " reading, writing, and arithmetic, etc.," every working day for the first four years, and in the principles of the Christian religion for one hour every Sunday. Two persons who had no connection with any of the mills were to be appointed every year as "visitors" one of whom was to be a Justice of the Peace, and the other a clergyman of the Established Church of England or Scotland.

The introduction of steam power removed the necessity for erecting mills on the sides of streams and permitted their establishment in populous towns whose needy inhabitants afforded a supply of labour. The children who resided near the mills worked in them, but as they were not apprenticed, their employment was not governed by the act of 1802. In 1815, after pressure from Robert Owen, Sir Robert Peel demanded that legal protection should be afforded to these children and he obtained the appointment of a House of Commons' Committee to consider the matter. However, it was not until 1819 that a new law was passed for the protection of the mill children, but this only applied to cotton mills and not to " other mills, manufactories and buildings " as originally proposed by Owen.

This Act of 1819 limited for the first time the age at which children might be admitted into mills to nine years and restricted the hours of employment of children between the ages of nine and sixteen years to twelve hours per day *exclusive* of one and a half hours for meals. The number of hours per week was *limited* to seventy-two and night work was prohibited.

Between the years 1820 and 1830 there was an enormous development in the woollen industry in Yorkshire and imports of

foreign wool were almost quadrupled during this period. The employment of children in the woollen mills was not subject to any restrictions and Richard Oastler's investigations showed that they were overworked, ill fed, cruelly ill-treated and rarely had sufficient time for sleep.

Nevertheless, the strong opposition of the Yorkshire woollen manufacturers prevented the application of the Factory Act of 1831 to their mills, so that it was limited to cotton mills. This act prohibited night employment of all persons between nine and twenty-one years of age, except in certain cases, and limited the hours of persons under eighteen years to twelve per day and nine hours on Saturday (i.e., sixty-nine hours per week).

Following the rejection of the Ten Hours Bill introduced into Parliament by Michael Sadler and Lord Ashley (afterwards Lord Shaftesbury) in 1832, a Royal Commission was appointed to make a new and comprehensive inquiry into the condition of factory labourers. The appointment of this commission was a turning point in the history of factory legislation, although it was by no means favourably received by the operatives.

Most of the recommendations of the Royal Commissioners were embodied in a new factory act generally known as Lord Althorp's Act which was passed in August, 1833. This was the first really effectual factory act and applied to all classes of textile mills, it has formed the basis of all subsequent legislation. For the first time a distinction was made between children from nine to thirteen years of age and so called "young persons" from thirteen to eighteen years. The maximum hours were fixed at nine per day and forty-eight per week for children and twelve per day or sixty-nine per week for young persons. Daily attendance of children at school for at least two hours was required. This was the first instance of school attendance being enforced by the state. The children were also to be given two whole and eight half holidays in the year. Certificates of age were to be obtained from a surgeon, and for the efficient carrying out of the law four Factory Inspectors were appointed. These inspectors were given wide powers including in some instances a penal jurisdiction, hence in parts of Lancashire a Factory Inspector is still known as a "finer."

It will be noted that at this period legislation mainly dealt with hours of employment and no provisions had been introduced for the fencing of machinery or for the protection of the workers against injurious dusts, gases, etc. However, the inspectors soon became aware of the many fatalities and serious accidents which occurred to workers in the mills through lack of fencing for the transmission and other machinery, and drew attention to these in their reports. As a result of these, and of the report of the

Children Employment Commission, further amending Factory Acts were passed in 1844, 1845, and 1847. The Act of 1844 reduced the working hours for children in the textile industry, introduced the half-time system of employment and education, and for the first time brought adult labour under the operation of the acts by extending protection to women in this industry. Engines, waterwheels, hoists and teagles and millgearing were required to be securely fenced and children and young persons were prohibited from cleaning millgearing in motion.

The Acts of 1845 and 1847 extended factory legislation to print works and other industries. Further acts restricting the hours of employment of young persons and women were passed in 1850 and 1853. The next act was the Factory Act, 1856, which further dealt with the fencing of machinery and declared that the word " machinery " should include " millgearing."

Legislation was extended to such industries as bleaching, dyeing and lace making by acts passed in 1860, 1861, and 1864, whilst by an Act of 1863 the night work of young persons under eighteen years of age was prohibited in bakehouses and a few hygienic regulations were introduced for these places.

The first recommendations of another Royal Commission appointed in 1862 were embodied in the Act of 1864 which brought within the scope of the law all manufactories of earthenware, percussion caps, lucifer matches, cartridges, paper staining and fustian or cotton velvet cutting. A new provision was added requiring rooms in the factories to be well ventilated and kept clean.

The commission extended their inquiry to various other trades and found that most of the great manufacturers were willing to submit to a legal reduction of the hours of labour, provided that the small workshops which competed with them by means of low wages and long hours should be subject to similar restrictions. The commission also found that in many cases it was the children's own parents against whom they required to be protected.

Accordingly in 1867 two Acts were passed, one extended the existing Acts with certain modifications to various classes of works, e.g., furnaces, machine works, paper mills, printing offices; the other called a Workshops Regulation Act brought within the scope of the law for the first time places in which persons were employed in handicrafts and in which no machinery was used.

Further legislation was passed between 1867 and 1875, by which certain exemptions were granted in connection with the employment of persons of the Jewish religion and the employment of children and females was prohibited in certain processes, the age of employment for children was also raised from eight to ten years.

By this time the law as to factories and workshops was a chaos

of regulations contained in a number of statutes. Another Royal Commission was therefore appointed in 1875, the report of this Commission which was published in 1876, led to the repeal of all existing legislation and the re-enactment, in the codifying Factory and Workshop Act of 1878, of many of the better features of the older acts with various alterations.

The Act of 1878 has formed the ground work of all subsequent legislation. This Act classified premises to which it applied as "factories" and "workshops." Broadly speaking, the difference between these was that a place in which a manufacturing process was carried on was a factory if mechanical power was used, and a workshop if it was not.

Factories were divided into two main classes "textile" and "non-textile." Textile factories were places in which machinery was employed in preparing or manufacturing processes connected with fibrous materials, such as cotton, wool, silk, or asbestos. Whilst non-textile factories were practically all other places in which manufacturing processes of any kind are carried on by the aid of mechanical power. These distinctions remained in the legislation up to this year, but have now been dropped in the Factories Act, 1937.

Further amending Acts were passed between 1883 and 1897 which contained new features. Thus, the Act of 1891 gave the Secretary of State power to make special rules for dangerous trades and thereby prohibit the employment or modify or limit the period of employment for all of *any* classes of persons engaged in such trades.

The Act of 1895, extended certain provisions of the Factory Acts to laundries and also to docks, wharves, quays, warehouses and to buildings in course of construction or repair by means of machinery The requirements as to the reporting of industrial accidents in the Act of 1878 were also extended to certain industrial diseases such as lead, phosphorus or arsenic poisoning and anthrax.

As a result of the various amending acts, factory legislation was again in a state of chaos before 1900 and another consolidating and amending act was therefore passed in 1901. This is the principal act which is still in force although it will now be superseded by the Factories Act, 1937, which was passed on July 30 this year and comes into force on July 1, 1938.

It is not therefore proposed to deal in detail in this paper with the provisions of the Factory and Workshop Act, 1901, or with those contained in the Factory and Workshop Act, 1907, The Police Factories (Miscellaneous Provisions) Act, 1916; The Women and Young Persons Employment in Lead Processes Act, 1920, as these have now been embodied, with or without amendment, in the

Factories Act, 1937. But attention will be drawn to the principal additions which have been made to existing legislation by the provisions of this new Act.

FACTORIES ACT, 1937.

General Remarks.

The Factories Bill, 1937, which became the Factories Act, 1937, was introduced into Parliament in February last, and in a White Paper presented to Parliament by the Secretary of State for the Home Department it was stated that " The bill proposes to revise the present law in conformity with modern standards and conditions, and will provide for greatly improved arrangements for securing the safety, health, and welfare of factory workers. The proposals in the bill are the outcome of a careful review of the results of the long experience acquired by the Home Office in the administration of the Factory Act of 1901, of inquiries by numerous committees which have considered different parts and aspects of the wide field of industrial regulation, and researches carried out by scientific bodies, and of experiments and investigations conducted by the industries themselves, and by individual manufacturers. Further, they have also been framed in the light of prolonged discussions which have taken place with representatives of employers and workers."

The Act is divided into fourteen parts, as follows: Parts I to IV—Health, Safety, and Welfare; Part V—Notification and investigation of Accidents and Industrial Diseases; Part VI—Employment of Women and Young Persons; Part VII—Special Applications and Extensions; Parts VIII to X—Home Work; Particulars of Piecework and Wages; and Miscellaneous; Parts XI and XII—Administration and Legal Proceedings; Parts XIII and XIV—Application of Act and Interpretation.

In this paper this sequence has not been strictly followed, as some re-arrangement has been found necessary for convenience and brevity.

Application of the Act.

It will be noted that, as is customary in statutes of this character the applications sections are placed near the end of the statute, but it will probably be more helpful in the paper to consider the various classes of premises to which the Act will apply before dealing with the provisions which affect them. As previously mentioned, the Act abolishes the distinctions which exist in the present law between " factory " and " workshop " and between " textile factory " and " non-textile factory," and employs only the one term " factories," and while some of the provisions have a limited application, the Act, generally, applies to all classes of factories as therein defined.

The definition of " factory " (section 151) consists of two parts (1) a general definition which embraces the great majority of works within its scope, and (2) certain specified classes of works which are not, or may not be, sufficiently covered by this general definition. Under this definition the expression " factory " means :—

" any premises in which, or within the close or curtilage or precincts of which, persons are employed in manual labour in any processes for or incidental to any of the following purposes, namely :—

(a) the making of any article or of part of any article ; or

(b) the altering, repairing, ornamenting, finishing, cleaning, or washing, or the breaking up or demolition of any article ; or

(c) the adapting for sale of any article ;

being premises in which, or within the close or curtilage or precincts of which, the work is carried on by way of trade or for purposes of gain and to or over which the employer of the persons employed therein has the right of access or control :

And (whether or not they are factories by reason of the foregoing definition) the expression " factory " also includes the following premises in which persons are employed in manual labour,"

Stated briefly, these premises are :—shipbuilding and ship repairing yards and dry docks ; premises in which articles are sorted or packed or bottles or containers are filled incidentally to the purposes of a factory ; premises in which cloth or yarn is made up or packed ; any laundry ancillary to another business or to a public institution ; premises in which locomotives or vehicles for transport purposes are made or repaired ; letterpress and other printing and bookbinding works ; premises in which dresses and scenery or properties for theatres or cinematograph studios are made or repaired ; premises in which fishing nets are made or repaired ; premises where articles of metal or wood are made or repaired incidentally to another business ; cinematograph film studios ; premises in which articles are made or repaired in connection with building operations or works of engineering construction premises used for a gasholder having a capacity of not less than 5,000 cubic feet.

There are various reasons for specifically mentioning the above classes of premises. For instance, shipbuilding and ship repairing yards might not be covered by the general definition of factory in view of an old High Court decision—Palmer's Shipbuilding Co. *v.* Chator (1869, L.T.638)—that a ship was not an " article." Again, many laundries are not carried on by way of trade or for purposes of gain, but in connection with various other businesses (e.g., hotels), or public institutions.

Speaking generally, the essential features necessary in order to constitute a premises a factory are (i) an employer and employees, (ii) the making, altering, repairing or adapting for sale of any article, and (iii) the work is carried on by way of trade or for purposes of gain. The fact that the work is carried on in the open air, e.g., brick works, does not exclude the premises from being a factory. Any line or siding used in connection with a factory is also deemed to be part of the factory.

Whilst any premises belonging to or in the occupation of the Crown and in which manufacturing processes are carried on are subject to provisions of the 1901 Act, this Act does not apply to similar premises in the occupation of municipal or other public authorities unless some manufacture is carried on by way of trade or for purposes of gain. Hence, municipal factories in which road-making materials were manufactured or vehicles repaired for the authorities' own use were not covered. This omission has been remedied in the 1937 Act, and any premises in the occupation of a municipal or public authority which come within the definition of " factory " are now subject to the provisions of the Act, similarly to a Crown factory although the work is not carried on by way of trade or for purposes of gain.

Special Applications : Tenement Factories.

The occupier of a factory is, in general, responsible for the observance of the provisions of the Act, but in the case of tenement factories, Section 101, imposes certain duties on the owner of the premises instead of upon the occupiers of the tenements. These duties include the provision of sanitary conveniences, the provision and maintenance of safety appliances for machinery or plant not belonging to the occupiers, maintenance of floors, stairs fire escapes, etc. A tenement factory is a bui'ding in which parts are used as separate factories by separate occupiers, but all are supplied from a common source of power within the premises.

Tenement Buildings.

Premises where there are one or more factories in part of a building, and the remainder of the building used for the purposes not subject to the Factories Act, are now quite common in large cities. These classes of premises differ from a tenement factory inasmuch as mechanical power is not distributed to the different factories from a central source on the premises, but each factory has its own power plant. Section 102, deals with premises of this class, and contains new provisions making the owner of the building responsible, in respect of the part of the building which is let off as a factory, for sanitary conveniences when used in common by several tenants, hoists and lifts, steam boilers, means of escape in case of fire, and maintenance of passages and stairs.

Electrical Stations.

The provisions of the 1937 Act are applied by Section 103 to any premises in which persons are regularly employed in or in connection with the processes or operations of generating, transforming, or converting, or of switching, controlling, or otherwise regulating electrical energy for the supply by way of trade, or for supply for the purposes of any transport undertaking or other industrial or commercial undertaking, or of any public building or public institution, or for supply to streets or other public places as if the premises were a factory, and the employer of any person employed in a premises in or in connection with any such process or operation were the occupier of a factory. This means that practically every electrical generating, transforming or switching station in which persons are regularly employed is brought within the purview of the Act.

Certain provisions of the Act also apply to any other premises in which any of the above-mentioned processes are carried on and which are large enough to admit the entrance of a person after the machinery or plant is in positon. These provisions will therefore apply to small transforming or switching stations or kiosks which can be entered. Further, the Secretary of State may by special regulations apply any of the provisions of the Act to any machinery or plant used for these processes wherever situated. In this way the provisions might be applied to pole transformers and switches.

Institutions.

Section 104 of the 1937 Act substantially re-enacts Section 5 of the Factory and Workshop Act, 1907, whereby certain provisions of the Act are applied to any premises forming part of an institution carried on for charitable or reformatory purposes and in which any manual labour is exercised in manufacturing or repairing articles not intended for the use of the institution, as if they were a factory.

Docks, Wharves, Quays, and Warehouses.

Section 104 of the 1901 Act applies certain provisions of this Act including the power of the Secretary of State to make regulations as to the safety and health to docks, wharves, quays, and warehoses, and to the loading and unloading of ships in any dock, harbour or canal. This section has been re-enacted in Section 105 of the 1937 Act with some modifications. Thus, all warehouses belonging to the owners of the docks, wharves or quays, used in connection with such places are brought within the provisions of this section, but other warehouses, i.e., inland warehouses, are only subject to the provisions if mechanical power is used in them. The reason for this is that a considerable proportion of these inland warehouses are now " wholesale shops " (within the meaning of the Shops Act, 1934), and therefore subject to the provisions of that Act as regards hours and conditions of employment.

The following provisions have been extended to docks and warehouses by the 1937 Act, viz., the power of the Secretary of State to required special provisions in cases of special danger, the power of the Court of Summary Jurisdiction to make orders as to dangerous conditions and practices, the power of the Secretary of State to make welfare regulations, and provisions as to posting abstracts and regulations. Section 105 continues to apply the requirements to the processes of loading, unloading and coaling any ship in any dock, harbour, or canal, and to all machinery and plant used in connection with these processes and treats the person who carries on the processes as if he were the occupier of a factory. Under this section certain of the safety provisions of Part II of the Act are now applied to warehouses as if they were factories. So that fencing can now be required for prime movers, transmission machinery, hoists, cranes, etc., when used in warehouses.

Ships.

Because it was held by the High Court in the case of Spencer *v.* Livett (1900), that the repairing of a ship in a wet dock did not make the dock a "shipbuilding yard" within the meaning of the 1901 Act, the provisions of this Act do not apply to such work on ships lying in harbours or wet docks, although the work may be absolutely identical with that which is carried on in connection with the finishing and repairing of ships in a shipbuilding yard or dry dock. This position will now be remedied by Section 106 of the 1937 Act which applies certain provisions of this Act to any work carried out in a harbour or wet dock in constructing, reconstructing, repairing, refitting, painting, finishing or breaking up a ship, or in scaling, scurfing, or cleaning boilers (including combustion chambers and smoke boxes) in a ship, or in cleaning oil fuel tanks or bilges in a ship, and persons undertaking such work in a ship will be deemed to be the occupier of a factory. There is, however, an exception from these provisions in the case of such work done by the master or crew of a ship or done on board a ship during a trial run.

Large numbers of persons are employed on the various classes of work mentioned and precautions are certainly required both for their health and safety. Cases of lead poisoning have occurred amongst men engaged in breaking up ships with the use of the oxy-acetylene flame; carbon monoxide poisoning may occur in connection with the heating of rivets in confined spaces and accidents arise from falls as in shipbuilding yards. Both men and lads are also employed in the extremely difficult and dirty work of cleaning out bilges, boilers, and oil fuel tanks on ships afloat in harbours or wet docks.

Building Operations.

A very limited number of the provisions of the 1901 Act are applied by Section 105 of that Act to premises on which machinery

worked by steam, water, or other mechanical power is temporarily used for the construction of a building or any structural work in connection with the building. As a result, any code of special regulations made by the Secretary of State in connection with building operations could only be applied in cases where such operations were carried out with the aid of some mechanical power, and that as soon as the use of power ceases the regulations cease to apply. This anomalous position has now been remedied by Section 107 of the 1937 Act and the definition of " building operation which is given in Section 152. By this definition " building operation " means construction, structural alteration, repair and maintenance of a building (including repointing, redecoration, restoration, and cleaning of the structure) the demolition of a building, the preparation for and laying the foundation of an intended building, but does not include any operation which is a work of engineering construction within the meaning of this Act. Amongst the more important provisions which now apply to building operations are those relating to sanitary conveniences, steam boilers and air receivers, special regulations for safety and health, the notification and investigation of accidents and industrial diseases, and the notification of commencement of work.

Works of Engineering Construction.

Hitherto, works of engineering construction, or what are generally known as civil engineering works have not been subject to the provisions of the Factory Acts. They are now brought under these provisions for the first time by Section 108 and the definition of " work of engineering construction " in Section 152. Although this definition is not exhaustive, it includes the principal classes of civil engineering works, and power is given to the Secretary of State to include by regulations other classes of works. Constructional work in connection with an existing railway line or siding is not included, as railways are under the jurisdiction of the Ministry of Transport. The construction of roads is also excluded for the same reason. The chief provisions of the Act which are applied to engineering works are the power to make regulations for safety, the power to make welfare orders (this appears to be especially important in view of the arduous and exposed conditions under which a great deal of navvies' work is carried on), the provisions as to steam boilers and compressed air receivers, the notification of accidents and diseases, the notification of the commencement of such works. The fencing of machinery, the testing and examination of cranes, chains, etc., on works of engineering construction will eventually be dealt with by means of a code of special regulations in the same way as these matters are dealt with at present on docks and building operations. This procedure has the advantage that the particular dangers arising from the special conditions of use of

the machinery and plant can be taken into account, and detailed requirements imposed to meet them after the matter has been discussed with representatives of the employers and workers.

Notice of Occupation of a Factory.

Section 113 of the 1937 Act re-enacts, with some minor modifications, the requirements of Section 127 of the 1901 Act with regard to notice of occupation of a factory. Under the new Section every person is required within one month after he begins to occupy or to use any premises as a factory to serve on the Inspector for the District a written notice stating the name of the occupier, postal address of the factory, the nature of the work, and whether mechanical power is used or not.

Further, any person undertaking any building operations or works of engineering construction is also required under Sections 107 and 108 respectively, to give written notice of such operations or works to the District Inspector of Factories within seven days after their commencement, unless he has reasonable grounds for believing that they are likely to be completed in a period of less than six weeks. This is an entirely new provision and brings all major building operations and works of engineering construction into line with ordinary factories in this respect.

Health : General Provisions.

Part I of the 1937 Act, which re-enacts, with important modifications and extensions, Part I (i) of the 1901 Act, contains the fundamental health provisions as to cleanliness, temperature, ventilation, lighting, etc., which are applicable generally to all factories, and on which the health of the industrial population of the country, so far as the working part of their lives is concerned, in the main depends.

Cleanliness.—Whereas Section I of the 1901 Act contains general provisions with regard to keeping a factory in a cleanly state and free from effluvia arising from any source, the corresponding section in the 1937 Act contains in addition requirements as to a definite routine for cleaning factory premises ; thus accumulations of dirt and refuse must be removed daily from floors and work benches, and the floor of every work-room must be cleaned at least once in every week by washing or other effective and suitable methods. Reference to white-washing or colour-washing in the new Act takes the place of "lime-washing" in the old Act. Provision is also made for cases where walls are made with smooth impervious surfaces by utilising glazed bricks or similar materials. Where the surfaces are suitable, walls must be washed at least once in every fourteen months, and in other cases, either white-washed or colour-washed in the same period. Exceptions from these requirements may be authorised in certain cases.

Overcrowding.—Important changes have been made in the existing law with regard to overcrowding of factories and workshops. Whereas the 1901 Act only requires a space of 250 cub. ft. per person during ordinary hours of employment, and 400 cub. ft. per person during overtime, the 1937 Act (Section 2) requires 400 cub. ft. per person at all times, and the space over 14 ft. from the floor, which is of little use from the point of view of the workers' health and comfort, is not to be taken into account. This increase in the cubic space is intended to assist in the maintenance of a healthy atmosphere in workrooms by providing sufficient space for the circulation of fresh air in the rooms without producing discomfort. Exception from these provisions is allowed in the case of existing workrooms for a period of five years, and on condition that suitable mechanical ventilation has been provided before the end of that period for a further period of five years.

Temperature.

Section 3 of the 1937 Act re-enacts the provisions of Section 6 of the 1901 Act with regard to temperature in workrooms, but greatly strengthens it. Whereas the old Act merely requires that adequate measures must be taken for securing and maintaining a reasonable temperature in each room in which any person is employed, the new Act fixes a minimum temperature of 60° (after the first hour) for light sedentry work, and gives power to the Secretary of State to fix standards of temperature for any class or description of factories ; it also requires the provision of thermometers in the case of sedentry work, and in any other case where the Secretary of State may direct. Further, no method of heating may be used which results in escape into the air of any workroom of any fumes which are likely to be injurious or offensive to persons employed.

Ventilation.

The provisions with regard to ventilation in the new Act are similar to those in the 1901 Act, but are strengthened by the requirement that provision must be made for securing and maintaining, by the circulation of fresh air in each workroom, the adequate ventilation of the room. This requirement is intended to secure, not only purity of the air breathed which is now recognised to be one side only of the ventilation problem, but also the movement of the air on which depends its cooling power. Modern research has shown that stagnation of the air is no less important, physiologically, than vitiation of the air.

Lighting.

It is a singular fact that until the passing of the 1937 Act, there was no general provision with regard to lighting in the Factory Acts, although requirements as to lighting had been included in

certain codes of special regulations made under the 1901 Act, e.g., Shipbuilding Regulations, Docks Regulations. Section 5 of the 1937 Act is, therefore, an entirely new provision. The importance of good lighting for efficiency in production, prevention of accidents, and the health and general well-being of the workers is well recognised. This section requires that " effective provision shall be made for securing and maintaining sufficient and suitable lighting, whether natural or artificial, in every part of a factory in which persons are working or passing." The Secretary of State is also empowered to make regulations prescribing a standard of sufficient and suitable lighting in factories or for any special process. All glazed windows and sky-lights used for the lighting of workrooms must be kept clean and free from obstruction, but the white-washing or shading of such windows or sky-lights is permitted for the purpose of mitigating heat or glare.

Sanitary Conveniences.

Section 7 of the 1937 Act re-enacts Section 9 of the 1901 Act with an important modification. The latter section does not apply to the County of London or to any place where Section 22 of the Public Health Amendment Act 1890 is in force, with the result that in such places the standard of sanitary accommodation laid down by the order of the Secretary of State does not apply. Hence there has been an absence of a definite and uniform standard of accommodation for factories, but this defect can now be remedied as the Secretary of State is given power under the new section to lay down standards as regards any class or description of factory.

This section requires that sufficient and suitable sanitary conveniences for the persons employed in the factory shall be provided, maintained, kept clean and properly lighted, also that proper separate accomodation shall be afforded for both sexes. The duty of enforcement of these provisions is placed by Section 8 upon the local Authorities throughout the country, but in the event of default by an authority, the Factory Inspector may take action in the same way as the Authority.

Medical Supervision.

An important new provision is introduced by Section 11 of the 1937 Act, the object of which is to enable the Secretary of State to take " preventive " action by requiring medical supervision in any factory or class of factories, in certain specified circumstances, The three sets of circumstances in which such supervision can be required by special regulations are : (a) where cases of illness have occurred, which may be due to the nature of a process or other conditions of work ; (b) where change in any process or in the substance used involves risk of injury to health ; and (c) where the process may cause risk of injury to health of young persons.

The medical supervision contemplated by this Section does not include medical treatment other than First Aid treatment, and if the Secretary of State exercises his powers under this Section in relation to a particular factory, any order made ceases to have effect at the expiration of a period not exceeding six months.

Health, Special Provisions: Removal of Dust and Fumes.

The powers of the Factory Inspector under Section 74 of the 1901 Act to secure the protection of workers against inhaling dust or fumes are limited to cases in which the dust or fumes are inhaled to an *injurious extent*, and in which the Inspector is of opinion that the inhalation can be prevented by the use of a fan or other mechanical means. The effects on health of breathing dust has been the subject of considerable investigation in recent years, and it is now generally accepted that although some dusts, especially those of lead compounds silica and asbestos are much more injurious than others, the constant breathing of any dust over a considerable period of time has a prejudicial effect upon health. From the point of view also of the comfort of the worker, there can be no question as to the desirability of reducing to a minimum the amount of dust entering the air of a work-room. An important modification has therefore been made in the existing law by Section 47 of the 1937 Act. This requires that the workers are to be protected, as far as practicable, not only against the breathing of dust or fumes of an injurious or offensive character, but also against breathing any kind of dust to a substantial extent. Sub-section 2 of this Section also contains a new provision, which requires that the exhaust gases from any stationary internal combustion engine shall be conducted into the open air, and that the engine (except where used for the purpose of being tested) shall be so partitioned off from any work-room as to prevent any injurious fumes from the engine entering the air of the room. These provisions deal with the danger which arises from poisoning by carbon monoxide, caused by escape of gas from the exhaust pipe or from other parts of the engine into work-rooms.

Meals in certain Dangerous Trades.

Section 48 of the 1937 Act re-enacts Section 75 of the 1901 Act with some modifications. Where in any room lead, arsenic or some other poisonous substance is so used as to give rise to any dust or fumes, a person must not be permitted to partake of food or drink in that room or to remain there during the intervals allowed for meals. In view of the prohibition of taking meals in work-rooms in which poisonous substances are used, suitable provision must be made for enabling persons employed in such rooms to take their meals elsewhere in the factory. This requirement of course, will usually be met by providing a canteen or messroom for the workers.

Protection of Eyes.

Investigations which have been made by the Factory Department show that a large proportion of accidents arising in certain machine and other operations, e.g., turning, grinding, chipping, welding, caulking, result in injuries to the eyes of workers. Section 49 of the 1937 Act therefore empowers the Secretary of State to make regulations for any process which involves such risk of injury to the eyes, and to require that suitable goggles or effective screens shall be provided for the protection of the workers. Small screens of non-splintering glass or "non-flam" celluloid are found to be very suitable for light metal lathes and abrasive wheels, whilst strong screens of wired glass along the centre of chipping benches afford protection for the workers on both sides.

Humid Factories.

The use of artificial humidity is adopted in many textile and some non-textile industries, and codes of special regulations dealing with this matter are in force in cotton cloth, flax, hemp, and jute factories; but other classes of humid factories, e.g., silk spinning, worsted spinning and cotton spinning, for which no regulations have been made, will be subject to the provisions of Section 52 of the 1937 Act. The principal requirements of this section are provision of hygrometers in every room in which artificial humidity is produced, reading of hygrometers twice daily, keeping records of the reading limitation of artificial humidity, general prohibition of artificial humidification when the reading of the wet bulb thermometer exceeds 72½°, use of water of standard purity for humidification purposes.

Underground Rooms.

The use of underground rooms for manufacturing processes has been the subject of considerable agitation from time to time. In 1921 an enquiry into the conditions in underground work-rooms in London was carried out by the Factory Department, and the results were published in the Chief Inspector's Annual Report for that year. The inspectors reported that there was considerable scope for improvement in the conditions in these rooms, especially in the matters of ventilation and lighting. Under Section 53 of the new Act, work is prohibited in any underground room which is certified by the inspector for the district as being unsuitable for the purpose in regard to construction, height, light, and ventilation, or on any hygienic ground, or on the ground that adequate means of escape in case of fire are not provided. The inspector may, however, suspend the issue of the certificate for a reasonable period, with a view to enabling the occupier to render the rooms suitable or to obtain other premises.

Special notice must be given to the inspector before any underground room is taken into use as a work-room, and underground rooms must not be used for processes specified by the Secretary of State which are of a hot, wet, or dusty nature, or liable to give off any fume, without the consent in writing of the inspector. Any occupier who is aggrieved by the decision of an inspector may, within twenty-one days, appeal by the way of a complaint to a Court of Summary Jurisdiction. The expression, "underground room," means any room which, or any part of which, is so situtate that half or more than half of the whole height thereof is below the surface of the footway of the adjoining street, or of the ground adjoining or nearest to the room.

Under Section 54 of the new Act, similar but more stringent provisions are applied to basement or underground bakehouses. No new premises may be used as a basement bakehouse, and all such existing bakehouses must obtain a certifiicate of suitability from the district council within a year from July 30, 1937, and subsequently every fifth year.

Lifting of Excessive Weights.

Some limitation of the loads to be lifted or carried by workers is very desirable from two points of view, namely—prevention of accidents and prevention of fatigue. A considerable number of accidents occur every year to men and male young persons especially, through lifting of excessive loads. Statutory requirements regarding weight lifting and carrying already exist in some industries, e.g. pottery, woollen and worsted, and Section 56 of the 1937 Act contains a new general provision dealing with the subject of lifting excessive loads. Under this section a young person must not be employed to lift, carry or move any load so heavy as to be likely to cause injury to him, and the Secretary of State may make special regulations prescribing maximum weights which may be lifted, carried or moved by any class of persons employed in factories, generally, or in any particular class of factory. Hence these regulations may be applied to men and women as well as to young persons.

Restrictions on Employment in Lead Processes.

Section 1 of the Women and Young Persons (Employment in Lead Processes) Act 1920 prohibits the employment of these persons in certain operations connected with the manufacture of metallic lead and lead alloys. This section has been re-enacted in Section 58 of the 1937 Act so that women and young persons are prohibited from employment in connection with lead and zinc smelting furnaces, and lead desilverising and lead melting furnaces, the making of solder or alloys containing over 10% of lead, the making of oxides and other lead compounds, mixing or pasting in electric accumulator works or cleaning any work-room where these processes are carried on.

Sections 2 and 6 of the 1920 Act are likewise re-enacted in Section 59 of the new Act. This contains provisions prohibiting the employment of women and young persons in any process involving the use of lead compounds and giving rise to dust or fumes or splashes from such compounds unless :—

(a) Proper exhaust appliances are provided for the removal of dust or fumes.

(b) The persons are medically examined at regular intervals.

(c) No food, drink, or tobacco is taken into or consumed in any room in which the persons are employed.

(d) Workers are provided with protective clothing.

(e) Suitable cloakroom, messroom, and washing accommodation is provided.

(f) All tools and apparatus are kept in a clean state.

Upon the certificate of the examining surgeon, any woman or young person may be suspended from employment in any of these processes if continued employment would involve danger to health.

Notification and Investigation of Accidents and Industrial Diseases.

The existing law with regard to notification of accidents in factories is contained in the Notice of Accidents Act, 1906, and the Workmen's Compensation Act, 1923. The provisions of these Acts have been amalgamated in Section 64 of the new Factories Act. This section requires written notice to be sent to the District Inspector of Factories of any accident which occurs in a factory, and either causes loss of life to a person employed, or disables any such person for more than three days from earning full wages at the work at which he was employed, but any accident which is notifiable to the Inspector of Explosives under the Explosives Act 1875, or the Petroleum (Consolidation) Act 1928, need not be notified to the Inspector of Factories. The Secretary of State may require, through regulations, that notice also be sent to the Inspector of Factories of any special class of explosion, fire, collapse of building, or accidents to machinery or plant *not* involving personal injuries.

A medical practitioner attending any person whom he believes to be suffering from lead, phosphorous, arsenical, or mercurial poisoning or anthrax contracted in any factory, must notify such case to the Chief Inspector of Factories. The occupier of the factory in which such person is employed is required to send notice to the District Inspector of Factories and also to the Examining Surgeon for the District. Both these requirements may be extended by the Secretary of State to other classes of industrial diseases.

The Examining Surgeon is required to investigate and report upon cases of death or injury caused by exposure in a factory to

fumes or other noxious substances, or due to any other special causes which may be specified, and he is also required to investigate and report upon any case of death or injury which may be referred to him by the District Inspector of Factories under any general or special instructions.

Where he considers it expedient to do so, the Secretary of State may direct a formal investigation to be held into any accident or case of industrial disease occuring in a factory, and for this purpose he may appoint a specially qualified person, or persons, to hold the investigation in open court. Such a court is invested with all the powers of a court of summary jurisdiction with regard to taking evidence on oath and the production of papers and documents, and all the powers of an inspector to enter and inspect any factory or building.

SAFETY—GENERAL PROVISIONS.

Part II of the 1937 Act re-enacts the substance of the safety provisions in Part I (ii) of the 1901 Act, but strengthens them in various respects and contains many new provisions. Whereas the principal provisions relating to the safeguarding of machinery are contained in one section of the 1901 Act, this has been expanded in the new Act into several sections dealing separately with prime movers, transmission machinery, other machinery, hoists and lifts, approach to unfenced machinery in certain circumstances, the construction and maintenance of fencing, and the construction and sale of new machinery.

Prime Movers.

As defined in Section 152 " prime mover " means every engine, motor, or other appliance which provides mechanical energy derived from steam, water, wind, electricity, combustion of fuel, or other source. Section 12, contains an absolute requirement that every flywheel directly connected to any prime mover and every moving part of any prime mover must be securely fenced whether situated in an engine house or not, and also requires the secure fencing of the races of every waterwheel or turbine. It is therefore no defence to allege, for example, that the flywheel and valve shaft of any engine are safe by position. An exception is, however, made to this absolute requirement in the case of electric motors and rotary converters if they are in such position, or of such construction as to be as safe as they would be if securely fenced. Electric motors are often completely enclosed and if not, they may be installed on overhead brackets and beams so that they are normally inaccessible and can be readily stopped by a switch at floor level if it is necessary to approach them for any purpose.

Transmission Machinery.

This is defined in Section 152 and means briefly every shaft, wheel, etc., by which the motion of a prime mover is transmitted to or received by any machine or appliance. Section 13 of the new Act requires that every part of the transmission machinery shall be securely fenced unless it is in such a position or of such construction as to be as safe to every person employed or working on the premises as it would be if securely fenced. This provision, corresponds to the provision in Section 10 (c) of the 1901 Act as to millgearing, which has been given a strict interpretation by recent decisions of the High Court. It must now be regarded as settled law that an occupier of a factory is under an obligation to fence all shafting which it is possible for anyone to approach unless he takes adequate steps to prevent any person being in danger by it. Many accidents, often fatal, and nearly always serious, have occurred through workers approaching such shafting for the purpose of shipping or unshipping belts, oiling, carrying out repairs, white washing, etc. Various devices are now available (examples of these may be seen at the Home Office Industrial Museum, Horseferry Road, Westminster, S.W.1) which make it unnecessary for workers in the ordinary course to approach the shafting at all. Some of these devices will now be made compulsory by three important new clauses contained in Section 13, these require :—

(i) the provision in every room or place of efficient devices or appliances for promptly stopping transmission machinery ;

(ii) the provision of belt perches or hangers to prevent belts when not in use from resting on the revolving shafting ; and

(iii) the provision of suitable striking gear or other mechanical appliances for moving belts on fast and loose pulleys and so constructed as to prevent the belt creeping from the loose to the fast pulley.

The Secretary of State is, however, given power by order to grant exemption from these requirements where, owing to special circumstances, the fulfilment of any of them is considered by him as unnecessary or impracticable.

The requirement in (i) is usually met in the case of electrical drives by means of an ordinary switch or push button. Where the whole of the transmission machinery is driven by a steam engine the usual method in textile mills, compliance can be made by means of a stop motion which closes the main steam valve and can be operated from any room. This, of course, stops the machinery throughout the factory. If this is undesirable, then the shafting etc., can be sectionalised by means of clutches or fast and loose pulleys.

Various types of belt perches or hangers have been devised, most of them are of simple construction but some are combined

with belt mounting and dismounting arrangements. Examples of both types may be seen in the Home Office Industrial Museum.

The requirements in (iii) will be met by the provision of the ordinary strap fork, but fitted with some locking device, crank or other arrangement for effectively preventing the belt creeping from the loose to the fast pulley and thus endangering workers by unexpectedly setting the machinery in motion.

Other machinery.

The first part of Section 14, 1937, re-enacts the requirement in Section 10 (c) of the 1901 Act that all dangerous parts of machinery must be securely fenced or be equally safe by position or construction. The remainder of the clause is, however, new. In many cases fixed types of fencing cannot be applied to the dangerous parts of machinery, such as the tools of power presses when used for certain operations, but a large number of accidents are undoubtedly prevented every year on such presses by the use of various types of automatic guards which remove the hand of the operator from the danger zone before the plunger of the press descends and thus, when effective, render the machine safe by construction. These automatic devices are now legalised by a proviso in this Section. Another clause in this Section enables the Secretary of State by regulations to make compulsory the use of certain forms of safety devices, where he is satisfied that such devices are available (a) for preventing the exposure of a dangerous part of machinery whilst the machinery is in motion, or (b) for stopping a machine forthwith in case of danger. Examples of the first type are the locking cover of a cotton carding machine, which prevents the dangerous cylinders of the card from being exposed whilst in motion, and the locking arrangement for the cover of the ordinary hydro-extractor used in laundries, which prevents the cover from being raised whilst the cage of the machine is revolving. Instances of the second type of device are the finger plates and knock-off motions which are used in connection with dough brakes, laundry calenders, etc., which are so arranged that on a worker's hand approaching the dangerous nip, the finger plate is moved and the machine is stopped by a tripping arrangement operating the clutch or belt striking gear.

Another new clause in this Section deals with a danger not met by the existing Act. This is a danger which arises not from any part of a machine, but from an article or material being manipulated in the machine. By this clause any part of a stock-bar which projects beyoud the headstock of a lathe must be securely fenced. The necessity for this requirement will be appreciated by the fact that in one year no less than 45 accidents were caused by persons being caught on stock-bars of lathes and in many instances they sustained serious injuries. Power is given to the Secretary of State to extend the requirements

of this clause to other machine processes where the materials or articles in the machines are dangerous whilst in motion.

The important words "securely fenced," "safe," and "dangerous" which occur in the provisions of the Act which have just been mentioned call for some comment. The meaning of these words in connection with any particular part of machinery must always involve a finding of fact, which must eventually be decided by the Courts. But there are several decisions of the High Courts which afford guidance as to their interpretation. Thus, in the case of Blenkinsop v. Ogden (1898) it was held that machinery must be securely fenced so that it is safe for negligent as well as for careful people. Then in the case of Davies v. Thomas Owen & Co. (1919) Mr. Justice Salter said: "The obligation imposed by the Factory and Workshop Act, 1901, in relation to the fencing of dangerous machinery is absolute. It is an obligation not merely to fence but to fence securely. The Statute does not say that dangerous machinery shall be securely fenced if that is commercially practicable or mechanically possible. If a machine cannot be securely fenced while remaining commercially practicable or mechanically useful, the Statute in effect prohibits its use."

The effect of the Statute and these decisions is to place an absolute obligation upon the occupiers of factories securely to fence every piece of machinery which is in its nature or may by its use be dangerous, and no defence is afforded by proof that it is commercially or mechanically impossible to fence or that the workman was negligent or even disregarded or acted contrary to express instructions. There is, however, a provision in the new Act (section 137) which enables the occupier to raise as a defence the fact (*a*) that he has used due diligence to enforce the execution of the Act, and (*b*) that some other person whom he has brought before the Court had committed the offence without his knowledge, consent, or connivance.

In the case of Butler v. Glacier Metal Co. (1924), an employee of an electric supply company was injured through coming into contact with overhead revolving shafting when descending a ladder. The local Justices found that the shafting was safe by position. But when giving judgment in the High Court Mr. Justice Salter said: "The question is whether this mill gearing was in the position required by law. The position must be a position of safety. The safety is measured by the needs and interests of the class of persons and that class includes not only persons engaged in the ordinary business of the factory but persons working in the factory in the way this injured man was working. The gearing must be in such a position as to be safe to every person so working, and not only safe, but as safe as if it had been securely fenced."

Again in the more recent case of Sowter v. The Steel Barrel Co. Ltd. (1935) the Lord Chief Justice said: "It is to be observed

that the words are ' securely fenced ' and not ' somewhat securely fenced ' and ' safe ' not ' moderately safe.' ' Safe ' means ' actually safe ' and this actual safety is to be procured (a) by secure fencing, or (b) by safe position, or (c) by safe construction."

In the case of Hindle v. Birtwistle (1897) which was decided under the Factory and Workshop Act, 1878, Mr. Justice Wills said : " It seems to me that machinery or parts of machinery is or are dangerous if in the ordinary course of human affairs danger may be reasonably anticipated from the use of them without protection . . . In considering whether machinery is dangerous, the contingency of carelessness on the part of the workman in charge of it and the frequency with which that contingency is likely to arise are matters that must be taken into consideration."

In the case of Shaxby v. A. W. Smith & Co. (1924) where a workman was provided with tongs for feeding material into an unfenced power press and notices were posted requiring him to use the tongs, the High Court took the view that the machine was dangerous and since it was not securely fenced the negligence of or disregard by the workman was immaterial.

Construction and Maintenance of Fencing.

All fencing or other safeguards provided under the Act must be of substantial construction, constantly maintained and kept in position while the parts required to be fenced or safeguarded are in motion or in use, except when such parts are necessarily exposed for examination or for any lubrication or adjustment shown by such examination to be immediately necessary. This provision is more stringent than the provision in the 1901 Act, whicl. allowed the removal of fencing while the dangerous parts of the machinery were under examination in connection with repair and for cleaning. It is now recognised that if repairs or cleaning of dangerous parts are necessary, then the machinery should be stopped before the fencing is removed.

Construction and Sale of New Machinery.

Section 17 of the 1937 Act embodies an entirely new principle in connection with factory legislation in this country, in that it requires certain dangerous parts of machinery to be securely fenced before it is sold or let on hire for use in a factory in the United Kingdom. This principle is based on the recommendations in the Accidents Committee's Report, 1911, and has two principal aims—(i) to ensure that machines are safe immediately they are installed in factories and thus avoid risk of accidents, and (ii) to meet the frequent complaints of machine users that after purchasing new machines, they are required by the inspectors to fit them with expensive guards which might easily and much more cheaply have been provided by the makers.

The practical effect of this section will be to oblige machine makers to observe the requirements as to the fencing of dangerous parts in the design and construction of their machines. Undoubtedly the majority of machine makers, especially machine tool makers, already carry out these requirements, and in the past twenty years there has been a very marked improvement in the fencing provided by these and other makers for their products. There are, however, still a large variety of machines sold in this country with unfenced dangerous parts and, as soon as these are installed in factories, the users are involved in considerable expense in order to meet their legal requirements.

Cleaning of Machinery.

The provisions with regard to the cleaning of machinery in Section 13 of the 1901 Act have been modified in some important respects in Section 20 of the new Act. The restrictions as to the cleaning of machinery by women are made much stronger. Whereas the existing provision is limited to the prohibition of the cleaning of millgearing (i.e. transmission machinery) whilst in motion, it is extended by the new Section to the cleaning of prime movers whilst in motion, and to the cleaning of any parts of a machine if exposure to risk of injury is involved not only from any moving part of that machine but also from any adjacent machinery. The same provisions are also extended to young persons. The necessity for this section arises from the fact that in industry generally, and especially in textile industries the accident rates for women and young persons from cleaning machinery are much higher than for men.

Training and Supervision of Young Persons on Machines.

The statistics of accidents given in the Chief Inspector's Annual Reports show that the accident rates for young persons of both sexes are considerably higher than those for adults. These higher accident rates are probably due partly to inexperience and unfamiliarity with the dangerous nature of machinery and plant, and partly to natural high spirits which will make boys and girls take risks of a kind that older workers realise should be avoided. Special steps are therefore needed for the protection of young workers, and one of these steps has been the insertion of Section 21 in the 1937 Act. This section requires that no young person shall work on any machine to which the section applies unless he has been fully instructed as to the dangers arising in connection with the machine and the precautions to be observed, and (a) has received sufficient training in work at the machine, or (b) is under adequate supervision by a person who has a thorough knowledge and experience of the machine. This section will apply to such machines as may be prescribed by the Secretary of State.

It is satisfactory to note that the question of the protection of young workers has been taken up by the National Confederation of Employers Organisations after consultation with the Chief Inspector of Factories, and the Confederation issued a memorandum in 1936 explaining the position and suggesting various methods for reducing accidents amongst juvenile workers.

Safety-Hoists, Lifting Machines, Lifting Tackle.

The only provision in the 1901 Act dealing with hoists and lifts is that in Section 10 (1) (a) that every hoist or teagle must be securely fenced. Much more comprehensive provisions are included in Section 22 of the 1937 Act in view of the fact that accidents on hoists and lifts are numerous and there is a high proportion of fatalities. The new provisions consist in part of sound mechanical construction, periodical examination by a competent person, enclosure of the hoistway or liftway and fitting of the openings into the hoistway or liftway with efficient gates. On all new hoists or lifts these gates must be of the interlocking type, but in the case of old hoists or lifts where it is not reasonably practicable to fit such devices, other arrangments may be permitted. Further, in the case of a hoistway or liftway inside any new building Section 36 (4) requires the enclosure and the doors for the openings to be constructed of fire-resisting materials so as to reduce the risk of fire spreading via the hoistway or liftway. A hoist or lift and the enclosure must be so constructed as to prevent persons being trapped between any fixed and moving parts. The maximum safe working load must be marked upon it and it must not be overloaded.

Additional provisions are made for hoists or lifts used in carrying persons whether with or without goods. Thus devices are required to prevent the cage overrunning. The cage must be fitted with an interlocking gate, subject to the proviso mentioned above with regard to old hoists or lifts, and in the case of a new hoist or lift there must be at least two chains or ropes each with independent attachements for the suspension of the platform or cage. Some exemptions from these provisions are allowed in the case of continuous hoists and of hoists or lifts not operated by mechanical power.

" Teagle " is a Lancashire term for a projection or jib over a door or opening in the outer wall of a building, which is fitted with a block and tackle used for hoisting or lowering goods in and out of the premises. Dangers do not arise so much from the teagle itself, but from the risk of a person falling out of the opening Under Section 22 such openings must be securely fenced. except when actually in use, and must be provided with secure hand-holds on each side of the opening. The Secretary of State has power under this section to exempt any class or description of

hoist, lift, or teagle opening from any of the requirements if these would be unreasonable in the special circumstances of the case.

Chains, Ropes, and Lifting Tackle.

The 1901 Act does not contain any general provisions on this subject, but provisions for the safe use of chains, ropes, and lifting tackle have been in force in connection with work in docks under the Docks Regulations since 1904, building operations under the Building Regulations since 1926, and under the Shipbuilding Regulations since 1931. Special reports have also been issued by the Factory Department of the Home Office on this subject. Section 23 of the 1937 Act requires chains, ropes, and lifting tackle, as defined in sub-section (2) to be of good construction and material and free from defect. The safe working loads must be exhibited in tables for the various classes of tackle, or alternatively marked on the chains or other appliances. Overloading is prohibited, and regular examinations by a competent person must be made at least once in every six months. In the case of new chains, ropes, etc., except fibre ropes, certificates of tests and examinations are required. Chains and chain fittings must be periodically annealed unless they have been subjected to some other form of heat treatment, e.g., normalizing, at least once in every fourteen months, or in the case of chains of ½ in. bar or smaller, once in every six months. A register containing prescribed particulars of all the chains and other lifting tackle must be kept available for inspection.

Cranes and Other Lifting Machines.

The 1901 Act does not contain any provisions in connection with cranes and lifting machinery, but detailed regulations have been made in respect of the use of cranes in dock work and building operations; some of these regulations have now been embodied in Section 24 of the 1937 Act. This section requires cranes and other lifting machines as defined in sub-section (8) to be properly constructed and maintained, to be tested and periodically examined, to have proper tracks or rails where these are necessary, to be fitted with an automatic safe load indicator or to have safe working loads marked upon them, and not to be loaded beyond these.

Sub-section (7) of this section deals with the danger which has been the cause of a number of fatal accidents through persons being trapped by overhead travelling cranes when working on or near the wheel track. This sub-section, therefore, requires that effective measures shall be taken by warning the driver of the crane or otherwise to ensure that the crane does not approach within twenty feet of any place where a person is employed in such a position. One method of giving the warning would be by means of a detonator placed on the track.

PREMISES, PLACES, AND PLANT

Construction and Maintenance of Floors, Passages, etc.

In 1936 there were over 21,500 accidents, including 310 deaths, reported from premises under the Factory Acts due to persons falling, and it has been estimated that over 40% of such accidents were due to falls on the level. Many of these falls on the level were caused by defects in floors, passages, and stairways. An attempt has therefore been made to minimise these risks by the insertion in the new Act of Section 25, which contains provisions requiring all floors, steps, stairs, passages, and gangways to be of sound construction and properly maintained. Every staircase used as a means of exit from a building must have a substantial handrail or, if the staircase has two open sides, two handrails. Further, all openings in floors must be securely fenced so far as the nature of the work permits. All ladders must be soundly constructed and properly maintained.

Safe Means of Access and Safe Place of Employment.

There is little doubt that a very large proportion of accidents due to falls from staging, platforms, etc., could be prevented by the provision of proper means of access to such places and proper fencing near the working place. The principle of these requirements has already been recognised in the special regulation for docks, buildings and shipbuilding. This has now been extended to factories generally by Section 26 of the 1937 Act which requires (i) that so far as reasonably practicable there shall be provided and maintained safe means of access to every place at which any person has at any time to work, (ii) where any person has to work at a place from which he will be liable to fall a distance more than 10 ft. then, unless the place is one which affords secure foothold, and where necessary, secure handhold, means must be provided so far as reasonably practicable by fencing or otherwise for ensuring his safety.

Vessels Containing Dangerous Liquids.

There is no requirement in the 1901 Act to deal with the risk which arises from unprotected vessels containing scalding or dangerous liquids, although in chemical works a regulation requiring the fencing or covering such vessels has been in force since 1922. Under Section 18 of the 1937 Act, a fixed vessel, structure sumper pit of which the edge is less than 3 ft. above the adjoining ground or platform must, if it contains a scalding corrosive, or poisonous liquid, be covered or be fenced to at least that height. Where such covering or fencing is impracticable owing to the nature of the work, then all practicable steps must be taken to prevent persons falling into it.

Places Where Dangerous Fumes are Liable to be Present.

A number of accidents occur every year in which persons engaged in cleaning, repairing or other work inside tanks, chambers, pits, etc., are gassed, frequently with fatal result. Provision has been made in the Chemical Works Regulations 1922 against this danger in these works, but the same danger arises in many other classes of premises under the Factory Acts, e.g., iron and steel works, breweries, cement works. Gassing may occur in a variety of ways, e.g., through the escape of fumes or gas due to a breakdown of the plant, or to a person working in a confined space, e.g., cleaning out a vat or tank. Risk arises not only to the person engaged in the work, but also to persons who have to enter the vat or tank to rescue him in the event of his being gassed. Section 27 of the 1937 Act contains new provisions to deal with this danger. It requires that unless there are other adequate means of egress, any confined space in which dangerous fumes are liable to be present shall be provided with a manhole not less than 18 in. long and 16 in. wide, or (if circular) not less than 18 in. in diameter. In the cases of mobile plant, the corresponding dimensions are 16 in. long and 14 in. wide or 16 in. in diameter. Further, for entry into such space either a suitable type of breathing apparatus must be provided in which case the person wearing it can enter the tank or receptacle in safety, or the management must first have taken every practicable means to remove any dangerous gases, and men are not to be allowed even when that is done, to enter the tank or place except with a lifeline which is held by a person outside, unless the place has been tested and found free from danger. This section also requires that a sufficient number of the persons employed shall be trained and practised in the use of breathing apparatus and methods of restoring respiration.

Sub-section (2) of this Section contains a provision prohibiting the employment of persons in boiler furnaces or flues until these have been sufficiently cooled by ventilation or otherwise.

Plant with Explosive or Inflammable Dusts, Gases or Materials.

Section 28 of the 1937 Act is an entirely new provision directed against three classes of danger which have given rise to a number of fatal and serious accidents. Attention has been called to these dangers and the precautions necessary to avoid them by memoranda and pamphlets issued by the Factory Department, but until this Act was passed they were not the subject of any general legislation. Sub-sections (1) and (2) of the Section deal with the danger of dust explosions. When a cloud of fine dust of any carbonaceous or other readily inflammable material comes into contact with some source of ignition, e.g., gas flame or electric spark, and the

proportion of dust to air lies within certain limits, a violent explosion will occur. The pressures set up by such explosions may be very high and cause the wrecking of buildings and plant with consequent loss of life and injury to persons. Such explosions are most liable to occur where any grinding, sieving, or other process giving rise to dust is carried on. The following provisions are therefore required by this Section : (a) prevention of escape of dust from the plant ; (b) prevention of accumulation of dust on floors, ledges, etc., so as to avoid the formation of a dust cloud in the event of a belt breaking or an explosion in the plant ; (c) exclusion or enclosure of all possible sources of ignition.

It is not possible to prevent entirely the risk of an explosion occurring in plants used in grinding and sieving such materials as flour, sugar, cork, etc., but the effects of such explosions can be greatly minimised by the provision of chokes or baffles in worms and elevators, and of vents or light explosion panels in connection with other parts of such plant. These devices are therefore required by the Section.

Sub-section (3) deals with the danger of gassing and gas explosions which are liable to arise when parts of gas plant, e.g., governor box, meter box, have to be opened up for the purposes of examination or repair. This sub-section, therefore, requires that before the nuts or other fastenings for the cover of any opening are loosened, steps must be taken to stop the flow of gas into that part of the plant. This, of course, will usually be done by properly closing the valve or valves. Further, that before the nuts or fastening are entirely removed from the cover, steps must be taken to reduce the pressure of gas behind the cover so that it will not be forced off suddenly and the workman overwhelmed by a rush of gas. It will be noted that this sub-section does not apply to plant installed in the open-air, where, owing to the rapid diffusion of any escape of gas, the risk is appreciably less than in buildings.

Sub-section (4) contains provisions for dealing with another type of explosive risk which arises when an oxy-acetylene burner or similar source of heat is applied to an " empty " tank or drum which has contained some inflammable liquid such as petrol, benzol, or cellulose lacquer, for the purpose of repairing or even for attaching a metal label. This sub-section requires that no plant, tank, or vessel which has contained any explosive or inflammable substance shall be subjected to any welding, brazing, or soldering operation which involves the application of heat until all practicable steps have been taken to remove the substance and any fumes arising therefrom, or to render them non-explosive or non-inflammable. In the case of petrol and similar tanks, this will usually involve the thorough steaming and ventilating of the tank or filling it with an inert gas such as carbon dioxide or nitrogen before

any welding or soldering operation is commenced. The sub-section further requires that no explosive or inflammable substance must be allowed to enter the plant, tank, or vessel until the metal has cooled sufficiently to prevent any risk of ignition.

Water-sealed Gasholders.

There are no provisions in the 1901 Act in connection with gasholders, but some serious explosions of gasholders, both in this country and abroad, due to the failure of old and corroded plates have drawn attention to the potential danger. Certain provisions in respect of gasholders have therefore been embodied in Section 33 of the 1937 Act. This requires that: (a) every gasholder shall be of sound construction and properly maintained; (b) be thoroughly examined externally by a competent person at least once in every two years; (c) any gasholder in which any lift has been in use for more than twenty years must have the internal state of the sheeting examined within two years of the coming into operation of the Act, and thereafter at least once every ten years by cutting samples from the crown and sides of the holder or by other sufficient means; (d) records of examinations must be kept available for inspection; (e) a gasholder shall only be repaired or demolished under the strict supervision of a competent person.

Steam Boilers.

Section 11 of the 1901 Act contained certain provisions with reference to steam boilers, but these have been considerably extended and strengthened by Section 29 of the new Act. Thus the definition of steam boiler in sub-section (14) now includes an economiser and a super-heater. This section re-enacts the existing provisions as to the usual safety fittings (safety valve, steam gauge, and water gauge), but the following additional fittings are now required, viz.: stop valve, a connection for a test pressure gauge, suitable fusible plug or efficient low-water alarm.

A provision has also been inserted with regard to lever safety valves so as to prevent the shifting of the weight along the lever and thus permitting increased steam pressure in the boiler.

Another new provision aims at the prevention of accidents which are liable to occur to men employed in cleaning or repairing a boiler forming one of a range, either through steam or boiling water being blown off from another boiler of the range through a common blow-off vessel into the standing boiler, or through a stop valve being accidently opened and steam being admitted to the boiler from the steam pipe common to the range. This sub-section therefore requires that before any person enters such a boiler, all steam or hot water inlets must be disconnected or the valves controlling them securely locked. Further, where there is a common blow-off vessel or sump for the boilers of a range, the blow-off

valves shall only have a single key which cannot be removed from one valve to open another until the first valve has been closed.

Every part of a steam boiler must be of good construction and sound material and the boiler and all its fittings and attachments must be properly maintained. Every steam boiler and all its fittings and attachments must be thoroughly examined by a competent person at least once in every period of fourteen months and also after any extensive repairs. A new steam boiler must not be taken into use unless a certificate of test has been obtained either from the manufacturer of the boiler or from a boiler-inspecting company or association. A secondhand boiler must not be taken into use in any factory for the first time until it has been examined and reported on. All reports of examinations of boilers must be kept available for inspection.

Steam Receivers and Steam Containers.

Section 11 of the 1901 Act applies only to steam boilers used for generating steam, but a considerable number of explosions occur in vessels in which steam is not actually generated, but into which it is passed for heating purposes such as kiers, ovens, boiling pans, drying cylinders, hot plates, laundry calenders, The majority of these explosions are due to (a) failure to maintain the vessels in good condition, and (b) failure to provide proper safety valves, reducing valves and pressure gauges or to maintain them in proper working order.

The Accidents Committee, 1911, therefore recommended that the provisions of the Factory Act should be extended to all vessels in which steam is liable to be introduced under such pressure as might render them dangerous. Section 30 of the 1937 Act carries out this recommendation, and requires that every steam receiver not so constructed and maintained as to withstand with safety the maximum permissible working pressure of the boiler or the maximum pressure of any other source of supply, shall be fitted with a suitable reducing valve, safety valve, steam pressure gauge, and stop valve. The safety valve and pressure gauge must be fitted either on the steam receiver or on the supply pipe between the receiver and the reducing valve, but any set of receivers supplied with steam through a single pipe may be treated as one receiver for the purpose of most of these provisions. Steam receivers are required to be properly numbered, to be of good construction and properly maintained and to be thoroughly examined by a competent person, so far as the construction of the receiver permits, at least once in every period of twenty-six months. " Steam receiver " means any vessel or apparatus (other than a steam boiler, steam container, steam pipe or coil or part of a prime mover) used for containing steam under pressure greater than atmospheric pressure.

" Steam container " means any vessel constructed with a permanent outlet into the atmosphere through which steam is passed at approximately atmospheric pressure for the purpose of heating, boiling, drying, evaporating, or other similar purposes.

Steam containers are not subject to the same provisions as steam receivers but they must be so maintained as to secure that the outlet is at all times kept open and free from obstruction.

Air Receivers.

Every year several accidents occur through the explosion of compressed air receivers used for storage purposes in connection with air compressing plants. These explosions may be due either to faulty design or to inadequate maintenance of the receiver or its fittings, or to the ignition of oil vapour in the receiver. Section 31 of the 1937 Act has a new provision aimed at the prevention of these dangers. This section requires that air receivers shall be of sound construction, provided with proper fittings, adequately maintained, and be thoroughly cleaned and examined at least once in every period of twenty-six months, but in the case of a receiver of solid drawn construction the competent person making the examination may specify a period exceeding twenty-six months, but not exceeding four years within which the next examination is to be made, and if it is so constructed that the internal surface cannot be thoroughly examined a suitable hydraulic test must be carried out in lieu of internal examination.

The term " competent person " is frequently used in the sections just mentioned, but is not defined in the Act, nor can an authoritative definition be given, but what appears to be contemplated is that the person employed to carry out examinations should have such practical and theoretical knowledge and actual experience of the type of machinery or plant which he has to examine as will enable him to detect defects or weaknesses which it is the purpose of the examination to discover, and to assess their importance in relation to the strength and functions of the particular machinery or plant. In other words a " competent person " should have special knowledge and experience of the particular class of machinery or plant which he is called upon to examine. The occupier of the factory is in all cases primarily responsible for the competency of the person whom he selects.

Under Section 32 of the 1937 Act the Chief Inspector may by certificate except from any of the provisions any class of type of steam boiler, steam receiver, steam container or air receiver to which he is satisfied that such provision cannot be reasonably applied. Any such exception may be unqualified or may be subject to such conditions as may be contained in the certificate.

Provisions in Case of Fire.

Several hundred fires in factories and workshops are reported to the Factory Department every year. and although fortunately few result in loss of life or injury to persons, the potential risks are considerable. Many of the recommendations which were made by the Royal Commission on Fire Brigades and Fire Prevention (1923) with regard to the means of escape in case of fire for factory premises have therefore been embodied in the provisions contained in Sections 34 to 37 of the new Act and these constitute a very important advance on the existing provisions.

Whereas Section 14 of the 1901 Act is limited in its application to factories and workshops in which more than forty persons are employed, and also as regards the provision of fire certificates by the local authority to premises constructed after certain dates, under Section 34 of the 1937 Act the classes of factories for which a certificate must be obtained have been greatly extended. They include every factory (a) in which more than 20 persons are employed ; or (b) newly constructed or converted for use in which more than ten persons are employed on any floor above the ground floor ; or (c) constructed before the passing of the Act in which more than ten persons are employed above the first floor or more than 20 ft. above ground level ; or (d) in or under which explosive or highly inflammable materials are stored or used.

Existing factories for which fire certificates have been obtained under the 1901 Act will be required to have new certificates.

The certificate given by the local authority must specify precisely the means of escape provided, and must include particulars as to the maximum number of persons employed or proposed to be employed, as to whether any explosive or highly inflammable material is stored or used, and other matters taken into account in granting the certificate. Also a copy of the certificate must be sent to the factory inspector for his information. A new certificate can now be required for any factory if any material alterations are made in the structure, number of persons employed, or if inflammable or explosive materials are stored or used. Where an inspector finds dangerous conditions as regards the means of escape in case of fire in a factory he may notify the local authority, and if they fail to have the matter remedied within one month he may take action in default of the authority.

Section 35 contains a new provision by which the Secretary of State is empowered to make regulations as to means of escape to be provided in factories or any class or description of factory and requiring the local authority to enforce such regulations when made.

While any person is within a factory, either for employment or meals, Section 36 requires that the exit doors from the factory or room must not be locked or fastened so that they cannot be readily

opened from the inside. In the case of a newly constructed or converted factory the exit doors of any room where more than 10 persons are employed, and also the main factory doors, must generally be constructed to open outwards. Further, in all factories fire exits must be conspicuously marked and passageways in rooms must be kept free from obstruction, and where explosive or inflammable materials are used or stored, audible warning arrangements in case of fire must be provided.

Where more than 20 persons are employed in a building above the first floor, or more than 20 ft. above the ground level, or explosive or inflammable materials are used, Section 38 requires that the workers must be instructed as to the use of the means of escape in case of fire.

Safety and Health—Special Powers.

Under Sections 79 to 86 of the 1901 Act the Secretary of State has power to make regulations for the safety of persons employed in dangerous trades where the danger arises from risk of accident or from risk of injury to health due to the use of toxic or other injurious materials. Under this power 42 codes of special regulations have been issued. These cover such processes and industries as the manufacture of lead compounds, manufacture of electric accumulators, manufacture of pottery, shipbuilding, use of woodworking machinery, chromium plating, grinding of metals, manufacture and use of celluloid, grinding of refractory materials, and manufacture of silica bricks. Similar provisions have been re-enacted in Section 60 of the 1937 Act, together with the Second Schedule of the Act. The latter sets out the procedure which must be followed for the making of such codes of regulations. The regulations must be issued in draft and if objections are made to these draft regulations, the Secretary of State may, if he thinks fit, amend the draft, or he may direct an inquiry to be held in accordance with the procedure specified in the Schedule. The special regulations made under this section may: (a) prohibit or modify or limit the hours of employment of persons in connection with any manufacturing process or machinery, or (b) prohibit, limit, or control the use of any material or process, or (c) modify or extend with regard to any class or description of factory any provisions of Part I, Part II, or Part IV of the Act imposing requirements as to health or safety.

Such regulations may impose duties on owners, employed persons, and other persons as well as on the occupiers of factories.

Power of the Secretary of State to Require Special Safety Arrangements.

Section 38 of the 1937 Act reproduces with an important modification the provisions of Section 29 (3) of the Workmen's Compen-

sation Act, 1923. This Section gives the Secretary of State very wide powers to require by order the setting up of safety organisations in factories. Under the new Section the procedure will be by special regulations instead of by order. No such order has actually been made under the existing Act, but as a result of a draft order issued in 1927 which applied to the main accident-producing industries, the Employer's Federations of the industries concerned undertook to secure by voluntary arrangements the setting up of safety organisations in all the works affected. The draft order applied to blast furnaces, iron and steel mills, heavy engineering, iron founding, and shipbuilding. The Annual Reports of the Chief Inspector of Factories show that such organisations have now been established in a large percentage of these works. Under the special regulations the Secretary of State can require the occupier of any factory to make arrangements for special supervision in regard to safety, investigation of the circumstances and causes of the accidents, and other steps to secure the safety of the persons employed.

These arrangements usually consist of safety committees composed of representatives of both the employers and workers with or without a safety officer. Where the committees are composed of representatives of the management only, the results attained are not so satisfactory, as such committees have not the same educative effect on the workers as the joint committees.

Power of a Court of Summary Jurisdiction to Make Orders as to Dangerous Conditions and Practices.

Section 39 of the 1937 Act extends the provisions of Section 17 of the 1901 Act. Under this Section if on complaint by an Inspector a Court of Summary Jurisdiction is satisfied that any part of the ways, works, machinery, or plant used in a factory is in such condition, so constructed or so placed that it cannot be used without risk of bodily injury, or that any process or work is carried on in such a manner as to cause risk of bodily injury the Court may, by order, prohibit the use of such ways, works, etc., or require the occupier to take steps to remedy the danger. The general power given in this Section is required to deal with dangers of a miscellaneous character, such as bad stacking of materials which may result in collapse and serious accident.

Power of a Court of Summary Jurisdiction to Make Orders as to Dangerous Factory Premises.

Section 40 of the 1937 Act re-enacts Section 18 of the 1901 Act with some small alterations. The provision in this section is very similar to that in the previous section and gives a Court of Summary Jurisdiction, on complaint by an Inspector, power to require steps to be taken either to prohibit the use of premises which are in a

dangerous condition, or to require the execution of repairs so as to remove the danger.

Welfare—General Provisions.

Part III of the 1937 Act, Sections 41 to 46, contains a series of general provisions relating to welfare in factories. The powers of making welfare orders were first introduced into the Factory Acts during the War by the Act of 1916. This was the result of experience which showed that output and efficiency could not be maintained in factories unless the best conditions were provided for the workers The new Act requires in all factories as follows :—

(i) The provision at suitable points of an adequate supply of drinking water acessible to all persons employed.

(ii) The provision and maintenance for the use of employed persons of adequate and suitable washing facilities will be required in all factories after July 1, 1939. The Secretary of State may by regulations specify standards for such facilities and may also exempt factories from these requirements in special circumstances. The existing law, however, will be continued as regards the provision of washing facilities for persons employed in processes in which lead, arsenic or any other poisonous substance is used, or any process liable to cause dermatitis or other skin affection is carried on ;

(iii) Adequate and suitable accommodation must be provided for clothing not worn during working hours, and where reasonably practicable, arrangements must be made for drying such clothing. Under this section also the Secretary of State may prescribe standards of suitable accommodation or exempt factories from these provisions by regulations.

(iv) There must be provided and maintained for the use of all female workers whose work is done standing, suitable facilities for sitting, sufficient to enable them to take advantage of any opportunities for resting which may occur in the course of their employment.

(v) There must be provided and maintained a first-aid box or cupboard of a prescribed standard, and, where more than 150 persons are employed an additional box or cupboard is required for every additional 150 persons. However, where an ambulance room is provided at a factory and arrangements are made to ensure immediate treatment of injuries, the Chief Inspector may, by certificate exempt the factory from the requirements as to first aid boxes.

The Secretary of State is further empowered to make regulations to secure the welfare of workers in any factory or class of factories where, owing to the conditions and circumstances of employment or the nature of the process carried on, such regulations appear to be necessary. Under these regulations duties may be imposed on the

owners as well as the occupiers of factories, and also as regards the use of the facilities provided for employed persons. These regulations will replace the Orders of the 1916 Act, under which special welfare arrangements have been required in a number of industries, e.g., glass, sugar, cement, fruit preserving, tanning.

EMPLOYMENT OF WOMEN AND YOUNG PERSONS

Hours and Intervals—Women and Young Persons over Sixteen.

Important changes are made in the law as regards the hours of employment of women and young persons by Sections 70 to 98 of the new Act. The 1901 Act provides in the case of women and young persons for a period of employment of twelve hours including intervals of one and a half hours for meals in non-textile and two hours in textile factories, on Monday to Friday and a period of employment of eight hours in non-textile and six hours in textile factories including an interval of half-an-hour on Saturday. The effect of these provisions is that the maximum weekly hours of work exclusive of intervals are sixty for non-textile and fifty-five and a half for textile factories. Further, the periods have to be fixed from 6-0 a.m. to 6-0 p.m. or 7-0 a.m. to 7-0 p.m. on Monday to Friday with the further alternative of 8-0 a.m. to 8-0 p.m. in non-textile works. The new Act provides for greatly reduced hours. The normal weekly working hours exclusive of intervals for meals and rest must not exceed forty-eight and the daily hours must not exceed nine in any class of factory, but overtime is permitted in certain cases. On the other hand, greater elasticity is allowed in fixing the hours of work. The period of employment must not exceed eleven hours but may be fixed at any time between 7-0 a.m. and 8-0 p.m on Monday to Friday and between 7-0 a.m. and 1-0 p.m. on Saturdays. Different periods of employment and different intervals for meals or rest may be fixed for different days of the week, but a prescribed notice showing the periods and intervals for each day of the week must be posted up in the factory. All women and young persons must have the same period of employment and intervals for meals and rest, except that the period for young persons under sixteen years may end earlier. Employment after 1-0 p.m. on Saturday or other short day substituted for Saturday is not allowed.

Intervals for Meals or Rest.

Under the 1901 Act, one and a half hours in non-textile factories (two hours in textile factories) must be allowed for meals during the twelve-hour period of employment and one hour at least either at the same time or at different times must be before 3-0 p.m. The new Act simply provides that a woman or young person shall not be

employed continuously for a spell of more than four and a half hours without an interval of at least half-an-hour. A five-hour spell can now only be worked provided an interval for rest or refreshment of not less than ten minutes is allowed in the course of the spell. Employment is deemed continuous unless interrupted by an interval of at least half-an-hour.

Subject to certain special exceptions, e.g., where the process is of such a nature that work requires to be carried on continuously, women and young persons must not during any part of the intervals allowed to them for meals or rest be allowed to remain in a room in which a process is then being carried on.

Overtime.

Under the 1901 Act in certain classes of non-textile factories liable to seasonal or unforeseen pressure of work or dealing with articles of a perishable nature women, but not young persons, could be employed for a limited amount of overtime beyond the sixty hours per week. Within the normal working week allowed by the Act, women and young persons in any industry could regularly work twelve hours every week over and above the normal week of forty-eight hours now fixed by the new Act. While such long hours are no longer permitted, the Act recognises the necessity for allowing occasional overtime for the purpose of meeting pressure of work, balancing production, and to meet emergencies. Thus overtime employment of women and young persons over sixteen years (but not young persons under sixteen) is allowed up to a yearly maximum of one hundred hours, subject to certain conditions as follows :—

(1) The overtime cannot be used to increase the normal hours from forty-eight to fifty over the whole year. It may not be worked in more than twenty-five weeks in the year, and the maximum overtime which can be worked in any week is six hours, subject to a power of the Secretary of State in certain circumstances to increase the number of hours in any week or the number of weeks in any year.

(2) The overtime is to be calculated, not by reference to the individual worker, but by reference to each period of time in which one or more women or young persons are employed overtime on any day. Employment in different parts of the factory, or employment in different sets of persons in different processes, may, however, be regarded as employment in different factories for the purpose of overtime subject to such conditions as may be prescribed by regulations. The maximum amount of overtime which can be worked by young persons is one hundred hours in any year, but there is power by regulations to increase the overtime employment of women up to 150 hours in any year in industries which are liable to seasonal or other special pressure.

Where in any class or description of factory the calculation of overtime according to the foregoing condition is unreasonable or inappropriate, the Secretary of State may by regulations provide for overtime to be calculated by reference to the individual workers. In that case no woman can be permitted to work for more than seventy-five hours overtime and no young person for more than fifty hours overtime in any calendar year.

In calculating hours of employment any fraction of an hour less than half-an-hour counts as half-an-hour and any fraction of an hour greater than half-an-hour counts as an hour.

Before employing any woman or young person in overtime on any day the occupier must send to the Factory Inspector a notice containing particulars of the overtime employment and of any interval for meal or rest to be allowed and he must also enter the particulars in the prescribed register, and post them in the factory.

Five-Day Week.

In cases where a factory is operated on the five-day week system a working day of ten hours is permitted (ten and a half hours if overtime is worked) within a period of employment of twelve hours. This arrangement permits a maximum working week of fifty-two and a half hours when overtime is worked. It has been found in certain factories that it is better, and preferred by the workers, on the occasions when overtime is necessary, to work four and a half hours overtime on Saturday morning and the Act allows this on condition that no overtime is worked on the other days. Overtime employment is limited to twenty-five weeks in the year.

Sunday Employment.

In factories the employment of women and young persons on Sunday has been prohibited for many years and this is continued under the new Act, except in the case of male young persons employed on the shift system in certain specified processes required to be carried on continuously day and night. It may also be allowed by regulations for women and young persons over sixteen in factories where milk is treated. The Act provides not only that a woman or young person shall not be employed in the factory on Sunday, but also that if employed in the factory on any other day of the week, they must not be employed on Sunday about the business of the factory or in any other business carried on by the occupier.

Exception is also provided where the occupier of the factory is a person of the Jewish religion or a member of any religious body regularly observing the Jewish Sabbath. In such factories Saturday may be substituted for Sunday as regards workers who are also of the Jewish religion or the same religious persuasion as the occupier, and Friday may be substituted for Saturday as the day of the half holiday.

Night Employment.

The night employment of women and young persons in industrial undertakings is prohibited by the Employment of Women and Young Persons Act, 1920 which is still in force. Under this Act women and young persons must not be employed at night during any period of eleven consecutive hours including the hours between ten clock in the evening and five o'clock in the morning. Exceptions are allowed in the case of young persons over sixteen employed on certain processes which are necessarily continuous, e.g., use of reverberatory or regenerative furnaces in iron and steel works ; manufacture of glass, paper.

Two Shift System.

The employment of women and young persons over sixteen on a system of two day shifts between 6-0 a.m. and 10-0 p.m. which can be authorised by an order of the Secretary of State under the Employment of Women and Young Persons Act, 1936, is not affected by the provisions of the new Act. But before such an order can be made the occupier must consult the workers and obtain their approval of this system of working by means of a secret ballot.

Holidays.

The provisions relating to holidays in the new Act are substantially those contained in the earlier law, namely, in England and Wales—the occupier must allow Christmas Day, Good Friday and the four Bank Holidays, or days in lieu fixed by him. In Scotland six weekdays are required to be given. These may be fixed by the occupier except that in burghs two of the days which must be not less than three months apart must be fixed by the town council.

The alternative of the two half-holidays for one whole holiday is no longer permitted and not less than three weeks notice of any substituted holiday must be given by notice exhibited in the factory. No provision is made in the Act for payment of holidays this being a matter outside the scope of the Factory Acts.

Employment of Young Persons Under Sixteen Years of Age.

The minimum age for employment in factories is governed by the Education Acts 1921 to 1937. A young person cannot be employed in a factory until he has reached the age of fourteen and not then if he is required to attend school or an alternative course within the meaning of the Education Act 1936.

The hours of employment and intervals for meals and holidays explained in the foregoing paragraphs apply also to the employment of young persons under sixteen who are eligible for employment in a factory, except that the latest hour at which young persons under sixteen can be employed is 6-0 p.m. and they may not be employed overtime.

As from July 1, 1939, the maximum weekly hours permitted for these young persons will be *forty-four*. It is left to the occupier to decide whether the reduction in the hours shall be made by giving an additional half-holiday or by a reduction in the number of daily hours of work.

The Act provides that if it can be shown to the satisfaction of the Secretary of State that the carrying on of any industry or process would be seriously prejudiced unless young persons under sixteen were allowed to be employed for longer than forty-four hours a week ; that the increased hours are not likely to injuriously affect the health of the young persons, and that the work is particularly suitable for young persons and is likely to lead to their permanent employment in the industry ; he may by Regulations allow their employment in that industry for more than forty-four, but not more than forty-eight, hours a week. Before any such regulations are made there must be a public inquiry.

Young Persons Employed in Hitherto Unregulated Employments.

The hours of employment of young persons under eighteen in certain occupations which have not previously been regulated are now brought under control by Section 98 of the new Act.

A young person who works in a factory in collecting, carrying or delivering goods, carrying messages or running errands, is to be deemed to be employed in the factory for the purposes of the Act (Section 153) which means that his hours and intervals for meals and rest must conform to those of other young persons employed in the factory.

Where such young person is employed in the business of the factory but wholly or mainly outside the factory, e.g., as van boy, errand boy, messenger, the total hours worked, exclusive of intervals for meals and rest, must not exceed forty-eight in any week ; the young person must not be employed continuously for more than five hours without an interval of at least half-an-hour and if employed between 11-30 a.m. and 2-0 p.m. on any day he must be given not less than three quarters of an hour between these hours for dinner. He must be given at least one half day off in each week, when he must not be employed after 1-0 p.m. This half holiday must be notified in the prescribed form and manner. He must have at least eleven consecutive hours off in every twenty-four hours, reckoned from midday one day to midday on the next day, including the hours from 10-0 p.m. to 6-0 a.m. next morning. The conditions apply not only to the employment of a young person in the work specified but to any employment by the same employer.

Young persons over sixteen employed in these occupations may on occasions of seasonal or other pressure or in cases of emergency

work overtime in excess of the hours set out above up to a limit of six hours in any week and fifty hours in any calendar year, but in not more than twelve weeks in the year.

As from July 1, 1939, the maximum weekly hours exclusive of intervals for meals and rest which young persons under sixteen years of age may work in these occupations will be forty-four.

The foregoing provisions apply also to young persons employed in connection with any business carried on at any dock, wharf or quay, or any warehouse (except a warehouse to which the Shops Act 1934 applies); or by any persons having the use or occupation of the dock, wharf, quay or warehouse or of premises within or forming part of it; or in connection with the processes of loading, unloading or coaling any ship in any dock, harbour or canal.

Certificates of Fitness for Employment of Young Persons.

Section 99 of the 1937 Act continues, with modifications, the system in force under Sections 63 to 66 of the 1901 Act—which dates from the 1844 Factory Act—under which a Certifying Surgeon (who is to be known as the Examining Surgeon in the new Act) appointed for the district examines young persons under sixteen when commencing their employment in factories and grants certificates for fitness for such employment. Under the new Act a young person under sixteen may not be employed in any factory for more than seven days unless he has been examined by the Examining Surgeon and certified by him to be fit for employment. The surgeon may attach conditions as to the work upon which the young person is fit to be employed, and may also specify in the certificate that he shall be re-examined after an interval. It is made an offence for an occupier to employ a young person without a certificate of fitness or otherwise than in accordance with any conditions imposed in the certificate. Under the new Act, where a certificate is refused or revoked by the Examining Surgeon, the parent of a young person may request him to give his reasons in writing for such refusal or revocation.

This section also contains another new provision by which the local education authority are required to arrange for their officers to furnish on the application of the Examining Surgeon, for his confidential information, particulars as to the medical history of the young persons which may be in their possession. Where an Inspector is of opinion that the employment of any young person, i.e., any person under eighteen years of age, in a factory or in any particular process or kind of work in a factory is prejudicial to his health or to the health of other persons, he may serve written notice on the occupier of the factory requiring the young person to be re-examined by the examining surgeon and certified that he is fit for employment in the factory or process.

Abstracts, Notices, and Registers.

In order that occupiers, managers and workers in factories may be acquainted with the provisions of the Factories Act, the former are required under Section 114 to keep the prescribed abstract of the Act and other notices and documents specified in the Act posted at the principal entrances to a factory and/or in such other places as an Inspector may direct. Printed copies of all special regulations in force in a factory must also be kept posted in convenient positions.

A general register as prescribed under the Act must be kept in a factory or other place approved by an Inspector. There must be entered in or attached to this register, particulars as to : (a) all young persons employed ; (b) washing, whitewashing and painting of the walls, etc. ; (c) every accident or case of industrial disease occurring to persons employed ; (d) any special exceptions which are used in the factory. Also all reports of examinations of steam boilers, steam receivers, and other plant and any other matters as may be prescribed.

The general register must be kept available for inspection by the Inspector or Examining Surgeon for at least two years after the date of the last entry therein.

Duties of Persons Employed.

Although provisions have been inserted in a number of codes of special regulations for dangerous trades made under Section 79 of the 1901 Act placing duties upon persons employed, this Act does not contain any general provisions of the kind. The provisions of Section 119 of the 1937 Act are therefore new and place an obligation upon the worker to carry on his work in accordance with the provisions laid down in the Act for his protection, and penalises him for misusing or interfering with the safeguards and facilities provided for his own and his fellow workers' safety and health.

ADMINISTRATION.

Factory Inspectors.

The provisions relating to administration in Section 122 of the new Act are practically identical with those of the 1901 Act. Under these provisions the Secretary of State may appoint Inspectors for the execution of the Act and assign them their duties and salaries. The occupier of a factory or any person directly or indirectly interested in a factory or in any process, business, or patent connected with a factory ,may not be a Factory Inspector.

The Factory Inspectorate is under the control of a Chief Inspector assisted by Deputy Chief Inspectors, and for purposes of factory inspection the country is divided into 11 divisions under Superintending Inspectors, and the divisions are divided into 90 districts under District Inspectors. Other inspectors are attached to division

and district staffs as their services may be required. In addition to general inspectors, there are also medical, electrical and general engineering inspectors in the inspectorate. Some of these specialised inspectors are attached to the various divisions and some to headquarters. The total staff numbers 270 inspectors.

Every inspector is furnished with a certificate of appointment, and when visiting premises under the Act he must, if so required, produce his certificate to the occupier or other responsible person at the factory.

Under section 123, inspectors are given various powers to enable them to enforce the Act. Briefly summarised, they are as follows :—

"To enter, inspect, and examine at all reasonable times by day and night a factory, and to enter by day any place which he has reasonable cause to believe to be a factory ;

"To take with him a constable if he apprehends serious obstruction ;

"To require the production of registers, certificates, notices, etc., and to inspect and examine and copy them ;

"To make any necessary examination and inquiry as to the observance of the Act ;

"To examine either alone or in the presence of any other person with regard to matters under the act any person whom he finds in a factory."

An inspector is also authorised to prosecute, conduct or defend before a Court of Summary Jurisdiction or Justice any proceedings arising under the Act.

The occupier of a factory, his agents and servants, must furnish the means required by an inspector for entry, inspection, examination and inquiry, and if any person wilfully delays an inspector, fails to produce documents, or attempts to conceal or prevent a person from being examined, he is deemed to have obstructed an inspector in the execution of his duties and renders himself liable to a fine of £5 on conviction.

Examining Surgeons.

Medical practitioners in general practice are appointed by the Chief Inspector to be Examining Surgeons for the purposes of the Act and they also have certain duties under the Workmen's Compensation Acts. A medical practitioner who is the occupier of a factory or interested in a factory cannot act as an Examining Surgeon. The Secretary of State may, however, authorise a medical practitioner who is employed in the medical supervision of the workers in a factory to act as the examining surgeon for the young persons commencing work in that factory.

Local Authorities.

Certain provisions of the Act, such as those relating to sanitation and certificates as to means of escape in case of fire are administered by the County and District Councils through their officers. In carrying out these duties the officers of the Councils have similar powers of entry, inspection, and taking proceedings as those of Factory Inspectors.

Offences and Legal Proceedings.

The occupier of a factory is guilty of an offence in the event of any contravention of the Act, or of any regulation or order made thereunder in respect of his factory, except where the contravention concerns some provision for which the owner is made responsible. Where an employed person contravenes any regulation or order which expressly imposes any duty upon him he is guilty of an offence, and the occupier is not guilty unless it is proved that he failed to take all reasonable steps to prevent the contravention.

Where an offence is committed by a company and is proved to have been committed with the consent or connivance of, or to have been facilitated by any neglect on the part of, any director, manager, secretary or other officer of the company, he, as well as the company, shall be deemed guilty of the offence.

Except where a penalty is expressly provided in the Act, any person guilty of an offence is liable to a fine not exceeding £20, and a further fine up to £5 per day if the contravention is continued. In addition to, or instead of, inflicting a fine, a Court may order an occupier to take steps to remedy matters within a specified time.

If any person is killed, or dies or suffers any bodily injury in consequence of the occupier or owner of a factory having contravened any provision, regulation or order, he is liable to a fine not exceeding £100, and the whole or any part of the fine may be applied for the benefit of the injured person or his family or otherwise as determined by the Secretary of State.

Any person who forges or counterfeits a certificate, knowingly uses a false certificate, falsely pretends to be an Inspector, makes a false entry in a register or notice, or makes a false declaration, is deemed guilty of an offence and liable to a fine not exceeding £100 or to imprisonment for not more than three months.

Where the occupier or owner of a factory is charged with an offence under the Act, he may lay an information against any other person whom he charges as the actual offender on giving the prosecution three days' notice, and if after the commission of the offence has been proved, the occupier or owner satisfies the court that he has used all due diligence to enforce the provisions of the Act or regulations, the other person shall be convicted of the offence.

Prosecutions under the Act are generally, although not invariably, instituted and conducted by an Inspector, and they are required

to be dealt with summarily, i.e., by a Court of Summary Jurisdiction. No person may act as a member of a Court in trying a case with reference to a factory who is the occupier or owner of the factory, or a near relative of the occupier or owner, or a person engaged in, or an officer of any association of persons engaged in, the same trade or occupation as the person charged with the offence.

Concluding Remarks.

Although I must apologise for the undue length of this paper, nevertheless owing to lack of time at my disposal it has only been possible to deal with many of the provisions of the new Factories Act more or less in outline. But some, particularly those relating to safety, which I considered would have a special interest for the members of this institution, I have attempted to deal with more fully. On the other hand, I have not even referred to many of the provisions in the Act e.g. those relating to homework, which mainly affect the clothing and allied trades, or to piece-work particulars. These are required to be given to piece workers in the textile and other industries in a certain way so as to enable them to calculate their wages. The various Truck Acts also constitute another class of legislation applicable to factories and dealing with wages. They prohibit the payment of wages otherwise than in coin of the realm, and regulate the conditions under which fines or deductions may be imposed.

However, in spite of these omissions I trust that I have been able to convey to you some idea of the legal requirements relating to factories and particularly the new provisions of the Factories Act, 1937. But I would strongly advise those who may be responsible for carrying out these provisions to obtain a copy of the Act from H.M. Stationery Office, and to study it carefully. When considering how the various provisions can be met, much useful and practical information may be obtained by a visit to the Home Office Industrial Museum, and by reference to the various safety and welfare pamphlets which have been issued by the Factory Department of the Home Office.

Discussion, London Section.

MR. LEWIS: I would like to pay tribute to the very valued assistance given to my own particular organisation, when we have approached the Home Office on several occasions for advice or information, but at the same time I must say that if we are to be subject to so many regulations and stipulations and threats of prosecution, it may be that the machines will be perfectly safe in the near future but not worked at all.

During the past twelve months we have had 72 accidents in our personnel of 3,500 people, but only 20 of those accidents were caused by machines and reportable owing to the fact that the men were absent for more than three days. Over the same period no less than 68 accidents were caused to our employees in their own homes by cuts, bruises, scalds, and burns. If that goes much further, it may soon become safer to be at work than to stop at home. It has also been found that motor accidents among employees amounted to 19, that injury in sporting activities accounted for 25, cycle accidents for 18, while falls in the street in the case of ladies who wear high heels were responsible for 23. So we have 153 outside accidents, and a grand total of 72 in the factory.

Coming to questions on the Factory Act, I would like to raise a few points. One is as to the temperature of a room or workshop being decided by the factory inspector. Well, I don't envy the factory inspectors their job, because they have got to persuade the people who are working in that room that they are right. The next point is the question of wearing goggles being compulsory. Goggles are provided in our organisation, and many organisations, and they are never worn. What steps are we to take regarding that? And then there is the overtime question. The overtime stipulations strike me as being very drastic. Within half a mile of this building there is a big organisation that works its employees at least sixty-eight hours per week, and as it is not considered to be a factory, there is no regulation preventing it from doing that. Is Mr. Stevenson Taylor aware that a very large portion of female workers work on Friday night, Saturday afternoon, and Sundays in other occupations? What is the Factory Deportment or Home Office going to do to prevent that? Further, regarding juvenile employees, the hours I understand will be forty-four from July 1, 1939. At the present time if one is going to work early one will see hundreds of boys and girls delivering papers and milk, and any amount of those boys and girls work in factories during the day. On Saturday afternoons boys are used as messengers in the various distributive trades. I am rather concerned from the safety-first point of view

about no provision being made to prevent this secondary or second occupation during the week. If overtime regulations are really made in the interests of the workers I think that some indication should be given as to what is to be done in these circumstances.

MR. STEVENSON TAYLOR: I would remind Mr. Lewis that his remark about the machines not being able to be worked at all if we have so many regulations was also made in 1844, when the first Factory Act dealing with fencing machinery was introduced. It has always been the cry when legislation has been brought in, but it has not happened yet, and I do not think it will happen in my time.

I was very interested in the particulars which Mr. Lewis has given us with regard to accident statistics both inside and outside the factory. These undoubtedly give cause for thought, but in spite of the fact that there is an excess of accidents outside as well as inside that is no reason why we should continue having them inside. Let us try and lower this percentage. I am not associated with the Ministry of Transport; I have quite enough to do to look after my own sphere. But nevertheless the prevention of road accidents to workers is an important matter.

Now, with regard to temperature in the room. The poor factory inspector has not got to decide it. Under the new act—as a matter of fact, I think I read it out to you—where the occupation is of a light sedentary nature the temperature must be 60°; that is fixed. In other classes of work the temperature may be fixed by regulations made by the Secretary of State, but they will not be made, of course, until after the matter has had proper consideration and discussion with the employers and workers' representatives concerned.

I should mention, although I had not time in the paper, that all these codes and special regulations are not brought out by the Home Office without an inquiry. There is always an inquiry and discussion with the representatives of the employers and workers in the industries; and generally speaking—certainly since the war—all these special regulations have been settled by what one might call a "round table conference," so that there is really nothing imposed on an industry without the knowledge of the industry, and without the industry having an opportunity of weighing it up. We are not quite so arbitrary as you sometimes think we are.

With regard to goggles, I think the new clause in the 1937 Act will be helpful to the employers in connection with this problem of wearing goggles. It is left to the Secretary of State to require the provision of goggles or screens in certain cases by regulations; and these regulations, of course, can contain—as many of the existing codes of regulations do contain—provision which requires the workers to make use of whatever appliances are provided for their protection: so that I am hopeful at all events that that clause

may be of service in this connection. I know there is a great deal of difficulty over this question, but I think that I may say that a considerable improvement has been made in the types of goggles which are now available, and many of the goggles are quite effective and are no more difficult to wear than ordinary spectacles—in fact they are nothing more than rather enlarged spectacles. I do not know whether any of you have seen the Report of the Safety in Mines Research Board, but they have gone into this question very carefully in connection with mining operations, and have found that a very large percentage of eye accidents can be prevented by wearing these somewhat enlarged spectacles, which are very cheap and can be worn without discomfort. But still, I do appreciate the difficulty of getting the men to wear them. I have come across many cases myself. One might rather amuse you. Some few years ago I was visiting some works in the West of England, and found two men working on a double ended grinder ; one was wearing goggles and the other was not. So I went up to the man who was not wearing goggles and asked him for the reason, as his mate was wearing his. So he said, " Oh well, he has only got one eye. He lost the other one when he was working on this job." He hadn't learnt the lesson !

Now with regard to overtime. I think Mr. Lewis will agree that generally speaking the time has come—in fact it has come long before the Factory Act—when the working hours of young persons and women in factories have been cut down by trade agreements to at least forty-eight hours per week and in some cases less than that—in the printing trade the weekly hours are already down to forty-five—so the Act is really only bringing the hours in all factories to the same level as I mentioned in the earlier part of my remarks—it is bringing bad employers into line with good employers.

With regard to your question relating to outside employment, this question has now been taken up by the Home Office, and I think some of you may know that the question of regulation of the so-called un-regulated occupations is being considered ; and there will I understand probably be a Bill before the House on this subject before very long. I did not read the paragraph, but there is one in my paper which deals with this question so far as factories are concerned. Messengers, errand boys and young persons employed in similar occupations in connection with factories will now be brought under the Factories Act, and the hours of work will be regulated in the same way as boys employed in the factory. I expect Mr. Lewis will think that is another hardship.

MR. BAMFORD : I was greatly interested in Mr. Taylor's statement regarding machine tools being securely fenced by the machine tool makers before delivery to the customers and would advocate

that dust extraction units should be fitted to dry grinding machines because as a planning engineer I have often found difficulty in obtaining a satisfactory type of extraction unit—the factory inspector usually holds one opinion about it and the works manager another.

With regard to the lifting of weights, I should like to know if there is any specific weight that can be lifted without lifting tackle in the factory, by any one person. Concerning the Truck Acts—I think Mr. Taylor mentioned the Truck Acts—I should like to know whether it is legal to deduct Income Tax from a person's salary without that person's consent.

With regard to the inspection of boilers, is it incumbent upon the buyer or the maker of the boiler to obtain or supply the necessary Certificate of Inspection ?

Finally, with regard to safety first measures in factories, what steps are the Home Office or the Government taking to prevent victimisation of a person who reports badly ventilated rooms or unsound safety schemes in factories ? I say that because in 1921 I worked in a factory in the North of England where between Monday morning and Saturday noon the only heat was the foreman's language. There were no sanitary arrangements and working conditions were vile. I reported this to the local Trade Union officials and immediately this was known to the management of the factory in question, I was fired.

MR. STEVENSON TAYLOR : I have a great deal of sympathy for Mr. Bamford. I have worked in Government offices myself and I think I should refer him to H.M. Office of Works in order to get the lighting and ventilation improved and the vermin removed. I have no responsibility for vermin. As a matter of fact, whenever we have noticed bad conditions of lighting or ventilation in Government premises we have generally drawn attention to the matter, but of course it is not directly our business, except in the case of factories.

With regard to the lifting of weights, there is nothing laid down in the Act as to maximum weight allowed, but there is a very interesting pamphlet which was issued by my Department during the early part of this year, and deals with the subject of weight lifting, I am sure that Mr. Bamford would find it of service. In this certain weights are suggested as being suitable maxima for different classes of persons. Of course, as everyone will appreciate, a great deal depends upon the individual. It is very difficult to lay down maximum weights suitable for everyone.

With regard to the Truck Acts, this subject is only mentioned in my paper, but time did not permit me to deal with it, and I suffer in the same way as Mr. Bamford by having my Income Tax taken off without my consent. If you are employed in the Government service the authorities always make sure of that.

With regard to boilers, the Certificate must be obtained by the occupier of the factory in which it is going to be used. In the case of a new boiler he can either obtain it from the manufacturers of the boiler, or, as is very often done, he can get the boiler examined by some boiler inspecting company or association, and that will satisfy the requirements. But it is up to the occupier of the factory to see that he obtains the Certificate and he must have the Certificate ready for the Inspector.

With regard to the question of victimisation, I am afraid I cannot offer Mr. Bamford very much help on that point. There is nothing in the Factory Acts to deal with the matter. There is, however, a provision to prevent occupiers of factories from making any charges for any of the facilities that are required to be provided for the factory workers, such as washing basins, sanitary accommodation, or anything of that kind. There have been cases where workers have been charged for the use of the sanitary accommodation.

MR. WHITE: It is not quite clear to me just what is meant by way of protection for line shafting and overhead pulleys. I would like to have that more clearly explained. Secondly, I belong to a company with a normal working week of forty-one and a quarter hours, employing a very large percentage of women and young persons, and I understand that the normal working day period may be extended to ten. With regard to the provisions for working those people overtime, does it take effect from the end of our normal working day or the end of the day as laid down by the Act? Again, with regard to the question of overtime when it is necessary, I feel that the Act is quite arbitrary if it requires notification to be given to the factory inspector of the day the overtime is required. The overtime under the Act, I understand, is granted for the purpose of meeting emergencies, rush of business, something that has to be got out immediately: if it has to wait till the next day orders may be lost. Thirdly, is there any provision in the Act, particularly so far as young persons and women employees are concerned, which will allow of their meal times being taken together at a certain hour? Is there any provision in the Act which will synchronise with the Ministry of Transport's suggestion of hours of industry, because the hours in industry are going to be very badly felt if that hard and fast rule cannot be overcome?

MR. STEVENSON TAYLOR: In relation to line shafting and overhead pulleys, the position is that so long as the occupier of the factory takes effective steps to prevent any person approaching the machinery whilst it is in motion, it is not necessary to fence. This means that there must not be approach for belt mounting, oiling, or other purposes whilst the shafting is in motion and the occupier who chooses to rely on safety by position instead of safety by fencing

must take the responsibility for ensuring that no one does approach it whilst in motion. For instance, if he calls in someone to lime wash the walls or mend a window, and that man places a ladder near the shafting, and whilst on the ladder he is caught on the shafting, the occupier is held responsible. He must either fence the machinery or stop it before any person is allowed to approach it. That is the legal position regarding this subject.

With regard to the question of the normal working week and overtime, it is the duty of the occupier of a factory to specify the legal periods of employment and the hours allowed for meals and post these up in the factory, so that he can always, without any notice, work overtime up to the forty-eight hours' limit. You see, that is the legal week, not more than nine, the legal hours, per day. The fact that they ordinarily work forty-one and a quarter hours does not really affect the working hours permitted by the law. If you specify in your notice a forty-eight hour week with nine hours per day, then overtime only counts after those periods which are specified in the notice.

Now with regard to the point about notification of overtime to the Inspector, I do not think there is any hardship. As a matter of fact, this requirement as regards notification of overtime has been working for many years, and all that it means is, that on the day on which you are going to work overtime you simply post a notice on that day. You do not have to notify the inspector so many days beforehand at all. The notice has only to be sent on the day before overtime is started. We have a special little cheque-book form of notice from which you take out a slip, fill it in, and post it, and that is nôtification to the inspector. You have also to enter particulars of the overtime on a form kept posted in the works so that the workers can see that you have given notice of overtime. I do not think there is any real difficulty about that.

Then with regard to meal times being simultaneous—that might be allowed by special arrangement in particular circumstances, but it would have to be by a special arrangement. It could not be done in any case, but it will be allowed under special circumstances such as those you mention.

MR. GREGG : Now that a ship has become a factory, I should like to know whether it is going to be necessary to fence off an auxiliary engine, because it is very nearly impossible to do this. Also in the case of inspection of boilers, this I understand applies to British owned ships, but in the case of a foreign ship, say a very old ship, coming into a British port for repairs, will the ship-owner or the shipyard-owner, be the person responsible ? How on earth can the shipyard owner tell that those boilers have been adequately inspected in the previous fourteen months, or even in fourteen years.

As regards goggles, the chief objection seems to be interchangeability. There is a great objection to having goggles which one man wears in one job and passes on to another man in the next shift. I have found that if each man is provided with goggles, they are much more popular.

The last question is with regard to this fencing problem. Does this requirement apply to the belt driven lathe with speed cones or not ?

MR. STEVENSON TAYLOR: There are only certain provisions which apply to ships and the provisions in the boiler sections do not apply at all. The question of ships' boilers are dealt with entirely by the Board of Trade. As a matter of fact, ships when loading or unloading goods, have been subject to the provisions of the Factory Act since 1905, and it is only ships undergoing repairs that are now brought into this new section, and it may help you if I point out that the provisions which apply do not include those dealing with the fencing of machinery. The special reason for bringing ships under the Act is more particularly in connection with the work of cleaning and scaling boilers and cleaning out oil fuel tanks and bilges. Another reason is, of course, to limit the hours of work of young persons who may be employed on repair work on a ship afloat in the same way as they would be if they were employed in a shipbuilding yard or dry dock. But there is nothing in the section itself which applies to the fencing of engines on ships. Further there is nothing in the Act which applies to any work which is done on a ship by the ordinary members of her crew, nor work done on board a ship during a trial run. You may be having a trial run in harbour or in wet dock and that work is exempt from the application of this section.

With regard to the fencing of lathes, I do not think there is any great difficulty with regard to the fencing of the speed cones so as to prevent access to the belt intake.

MR. GREGG: The belt has to be changed when the shafting is running.

MR. STEVENSON TAYLOR: Yes, quite. But that does not necessarily mean that you have got to run the risk of getting your hand in the belt. You can have belt shifting gear.

MR. GREGG: That is not usual.

MR. STEVENSON TAYLOR: No, it is not very common, that is quite true, but it can be done that way. Or you can stop your lathe and do it by hand.

A MEMBER: Stop the whole shaft ?

MR. STEVENSON TAYLOR: No, stop the lathe, not the counter shaft. On the majority of lathes nowadays you do not have these arrangements at all. Modern lathes give speed changes by the gears and not by the speed cones.

MR. GREGG : There are still a great many of the older machines left.

MR. STEVENSON TAYLOR : I know there is still a great number, but I do not anticipate any difficulty. The requirement of the Act with regard to fencing has been in force for years.

MR. BAMFORD : Do the authorities define a seaside boarding house as a factory ? I am thinking now of the long and arduous hours' work done by some of the domestic servants in those houses.

I would like some information too on the question of overhead conveyors, as there seems to be a difference of opinion regarding the guarding of this type of conveyor. For instance, one factory I have worked in had the overhead conveyor fenced wherever it passed over any place where men were working. In another factory no consideration was given at all to this safety feature.

Another point I would like to raise is that concerning plating tanks. I always understood that the tanks were to be installed in such a manner that the tops of the tanks should be above the level of the average man's knees, but this week I saw an illustration of the plating outfit supplied by a leading firm of plating installation engineers which was apparently a modern installation and the tops of the tanks appeared to reach not more than 15 in. above the floor level.

MR. STEVENSON TAYLOR : I am sorry to say ladies and gentlemen that seaside boarding houses are not under our jurisdiction. I suppose one could have merry hunting in some of them.

With regard to overhead conveyors, the question of guarding is one that can only be decided in the individual cases. If a person has to work under an overhead conveyor where there is a risk of injury, of course it should be properly guarded.

With regard to fencing of plating tanks, there is a definite provision in the Act—which has many clauses to which I was unable to refer—thus Section 18 requires that every fixed structure, sump or pit, of which the edge is less than 3 ft. above the ground or platform must be either covered or securely fenced to that height. Exemption may be allowed in certain cases where this may be either impracticable or unnecessary, but the general requirement is that they should be fenced to a height of 3 ft. That is in the new Act.

MR. GERARD SMITH : In my trade socially conscious employers are few, and I am wondering how on earth Mr. Taylor's department is going to trace the application of this Act. I am thinking especially of overtime hours. In the furniture trade there are thousands of small size shops, say of ten employees, and they will not all make entries in the registers—they will tell lies, and you cannot catch them, so far as I can see.

Employees seem not to be liable, but they are certainly concerned with the working of the Act, and I would like to know whether there

are any excerpts from the Act or something that one can hand one's employees, so that they can understand what is required of them. You cannot expect them to read or to understand the whole Act as printed. As production men, I take it most of us here are responsible for labour, and it seems that under the new Act one's employer can, if he so wishes, bring the manager into Court as being liable for any infringement. A man, for instance, leaves a guard off that is provided and it is obviously the manager's business to see that that guard is used. Can he become liable for damages? If so, I must find an insurance company right away that will guard me against such risks. Apparently the manufacturers are at long last going to be forced to provide adequate guards for machines they sell. Can you in any way rope foreign manufacturers into that?

With regard to young persons working on machines, I would rather like a definition of what working on machines means, because we use a lot of machines from the outer end of which the goods are taken and stored on a barrow. Is the off bearer working on a machine in the meaning of the Act?

Lastly I would like some definitions of an air receiver. There are a large number of air cramps, for instance, in our business for assembling parts for working on air pressure up to 80 lb. per square inch, up to 10 in. diameter. Are these to be inspected every fourteen months?

MR. STEVENSON TAYLOR: I should like to assure Mr. Gerard Smith that we are going to considerably increase the staff of factory inspectors to look after some of his friends in the furniture trade, and we know a lot of these gentlemen. We have known them for a good many years and they do not always get the best of us. I have no doubt that soon after the new Act is brought into force some of them will be making their appearance before the Courts for working excessive overtime or something of that kind. I think he may trust us to do our best to enforce the law.

With regard to the point about excerpts from the Act. Only to-day I have had through my hands a draft of a memorandum which the Home Office is issuing on the subject of the Factory Act. It is, if I may put it, a sort of simple guide to the provisions of the Act, and I am sure it will be helpful to employers, managers, and others.

I am afraid I cannot answer directly Mr. Gerard Smith's knotty problem with regard to the liability of managers, but generally speaking, the manager is regarded in a sense as the same as the employer or occupier, unless he can prove in some way that he is quite independent and not responsible. But in individual cases of course it must be a matter of fact. I am not pretending for a moment to give you legal advice on this point.

With regard to foreign machines, new machines, the wording of the Act is quite sufficient to deal with that question, because it

lays down that any person who sells or lets on hire, or as agent of the seller or hirer, causes or procures to be sold or let on hire, for use in a factory in the United Kingdom any machine to be driven by mechanical power shall come under the Act. The person who acts as an agent for a foreign firm therefore can be dealt with.

With regard to young persons employed on the machines, there again the wording is " shall not work on any machine " until he has been fully instructed as to the dangers. Well, there again it is a question of fact. I should say on the face of it, that any young persons working in connection with a machine are covered by the clause—that is my own personl view. You are always at liberty to dispute the views of the inspector by going to Court and getting a decision there. As far as we are concerned, that seems to be the commonsense view to take.

MR. WHITE: I should be very interested to know what the relationship is between the factory inspector and the works manager. I rather think that the factory inspector tends to go into the factory, walks round, frequently does not make the close inspection that I think he should do, and probably goes away reasonably satisfied, and you may not see him again for a matter of weeks until you unfortunately have an accident. He then is probably quite prepared to take you to Court. He is quite ready to do that, and yet he probably has given you very little advice on the one or two occasions on which he has called. It would seem to me that he should be essentially an adviser. It should be his job to go round the factory and point out specifically points which are at fault, and when he goes into a factory which is obviously doing its best to try and protect the workers as far as possible he should surely take that into consideration.

Now I have been into very many factories throughout this country, many of them in the Birmingham area, and it is perfectly obvious that very little action is taken to protect the workers from a safety point of view, and those people apparently get away with it. Possibly the labour there is accident-minded, and they may not have the number of accidents which I should have imagined possible—I do not know. But I am perfectly sure that most of the factories in the London area are taking very careful notice of accident troubles and are accident-conscious, and I do not think that factory inspectors are very wise in taking people to Court unnecessarily—I think they are rather apt to do that. I am of the opinion that it is almost a joint responsibility of the factory inspector and the works manager, if he is a reasonably regular attendant at the factory and if he is ready to act in an advisory capacity. It certainly seems to me that if increased legislation should go on, the standard of the inspector should very considerably increase.

MR. STEVENSON TAYLOR: First of all, Mr. White, it is a fundamental axiom of factory law that it is the occupier of the factory who is responsible for carring out the provisions of the Act. Therefore no legal responsibility can be put on the inspector. Nevertheless, we expect our inspectors to give every possible help they can to occupiers and managers of factories in the way of safeguarding machinery, or any other requirements of the Factory Act.

Unfortunately we suffer, like many other departments, from shortage of staff, and the area which you particularly mention, the Birmingham area, has really been very badly overworked. I am not offering that as an excuse, but that is a fact. Pressure of work has been very great, because Birmingham is an area which has enjoyed very considerable industrial prosperity in recent years, and as a result, unfortunately, you get a large number of accidents which require investigation, and a great deal of the inspectors' time is taken up in such investigations.

But not only do we expect our inspectors to give every possible assistance, but I think I may say quite frankly that after over thirty-five years in the factory department now, I have found that the attitude of the occupiers and managers towards the inspectors has entirely changed, and they do look on us as helpers and advisers with regard to the problems with which they are faced, but nevertheless they must themselves look out and watch for the dangers in their own works. You must remember that an inspector, even with the best of intentions, can only spend a small amount of time in one works. He visits each factory perhaps on one day during a period of several months, and on an average each inspector has about 1,000 factories to inspect in the course of a year, and some factories he has to visit two or three times a year. He only sees the conditions on that particular day, whereas the manager is in the factory the whole time, and it is his business to see that the requirements of the Act are carried out.

I know from experience myself that in many cases the managers wait too long for and expect too much from the inspectors; they do not do anything with regard to fencing until the inspectors call, and if they do not come the managers leave it alone. That is not fair. Not only do inspectors give advice in the way in which Mr. White suggests, but we have brought out a large number of pamphlets and memoranda on the safeguarding of various classes of machinery. We are also bringing out, as you probably know, quarterly magazines called the Accident series, in which we draw attention by paragraphs on about 20 cases of different types of accident in each edition of the series, indicating the way in which the accidents have occurred, and in all cases showing how they can be prevented and avoided. I think if the managers would make more use of these and also of the pamphlets and memoranda which

we have prepared, they would find them of great assistance. I would also suggest that they should make more use of the Home Office Industrial Museum, where we illustrate, as far as practicable, various kinds of machines, welfare arrangements, and other arrangements for safeguarding machinery and improving conditions in factories.

MR. BARNET: I am afraid I cannot altogether agree regarding the relationshipbetween the inspector and the employer. My experience has been that very good results have caused suspicion. We had a very long run of freedom from accidents, and we got pestered as to whether we were reporting our accidents. As a matter of fact, the last inspector who came down actually demanded to see the general register and wrote in it that accidents must be reported after three days' absence, which we knew quite well, and I feel quite sure that that was put there with a view that if on any future occasion we happened to slip up there would be evidence against us in the Supreme Court.

MR. STEVENSON TAYLOR: I do not think that is really the right interpretation. We find sometimes that the particular foreman who deals with the matter of accidents pleads ignorance on the subject, and in order to remind him the inspector puts a note in the register. It so often happens that in many factories the staff is changed. The former man who dealt with the job was quite familiar with the procedure, but he has probably forgotten to tell his successor about matters such as reporting accidents, with the result that they do not get reported, and then the occupier has to take the responsibility.

On this question of prosecution, may I say that we in the department do not like prosecutions. We much prefer to get the Act carried out by persuasion and discussion with the occupier and management. Prosecutions are of no advantage whatever to anyone in our department. The less we have the better. Prosecutions are a waste of time and money, and we only hope and trust that occupiers and management will do their best to avoid them.

Unfortunately, of course, sometimes when accidents occur through neglect to securely fence certain parts of machinery or for some other reason the department has no option whatever but to prosecute. There is no choice if the law is broken. If an accident has occured through neglect to observe a provision of the Act there is no doubt that we, generally speaking, must take legal action. No proceedings are instituted by the district inspector on his own account. All cases have to be submitted to a higher official, and very often they have to be submitted to the chief inspector himself before proceedings are taken, so that they are not taken straight off by the district inspector.

MR. YOUNG: Might I add that after seventeen years in a responsible position and working in very close touch with factory inspectors, I have have always found them courteous, of the highest integrity, and willing to help. I have certainly found them human, and, like all humans, they have occasionally erred, but they have always tried to help.

MR. FIELD: On the collection of dust and fumes and matters of that nature, I have found that the makers of the equipment are very much in doubt as to what will be accepted by the factory inspector, and if that has not been laid down in the new Act, perhaps Mr. Taylor could tell us whether there is any data on it in the Home Office. The second point is with regard to factories which do fairly general light engineering productions which involve say sand blasting, a little chromium plating, polishing, and one or two other sundry operations like that. Could Mr. Stevenson Taylor give us the exact number of registers to keep so that we can go away and check them and keep the right number?

MR. STEVENSON TAYLOR: On the question of the collection of dust, no definite standard has been laid down. Of course the provisions in the regulations and of the Act require that the dust shall be removed so as to prevent its inhalation by the workmen as far as practicable. We are, however, working towards some sort of standard. We have one of our inspectors carrying out at the present moment some researches on dust measurement. It has been a very difficult problem. Various kinds of dust measuring instruments have been invented during the last twenty years. Some of them are not particularly reliable—they depend very much on the personal element to a great extent, but we hope that the one which has been brought out now in this country will be accurate; and if we can make use of an instrument of that type we shall, I believe, be in a position to lay down some sort of standard. It is particularly important when you are dealing with dust, such as silica and asbestos or other particularly injurious dusts, to know whether you are removing them or not. It is the very finest particles, of course, which cause the trouble. It is not the larger pieces that you can see in the sunlight, but minute particles which get down into the lungs.

With regard to the various registers that will be required, I am afraid I cannot state that right off, Mr. Field. We are at the present moment getting out these new forms. That is one of the features of the new Bill. I have no doubt we shall be able to overcome any difficulties.

I did not get an opportunity in the paper, but Mr. Field has given me the opportunity to mention one point and that is our desire that sand blasting shall be abolished. It is one of the processes which is causing silicosis. It is possible to substitute either steel-

shot or other materials for sand, and wherever you can please do it, because you are thus eliminating a very serious risk. The rate of mortality amongst sand blasters is very serious, and if any of you look at the Annual Report of the chief inspector for 1934 or 1935 you will find statistics there which show that sand blasters die at an early age and that there is a high mortality rate amongst them. This is a matter which we have discussed with the Engineering Allied Employers' Federation, and I know that they are very enthusiastic to bring about a change as rapidly as possible, and replace sand by other materials so as to avoid this risk of silicosis, and I do hope that you will try to avoid using sand.

Mr. PUCKEY (Section President, who presided): Mr. Taylor is, I think, an excellent publicity agent for the Home Office. I have not heard a better, and he has put forward the case for the new Factory Act admirably, but at the same time I think the Home Office in general has a very bad publicity department, and I cannot help feeling that very few of us have a really good knowledge of what the Home Office does provide in the way of pamphlets. Most of us know of the Home Office Museum and a good many of us have been there, but as far as pamphlets and memoranda are concerned, I am quite sure that a lot of us do not know what is published. I cannot help feeling that something might be learnt by the Home Office on this matter. There are a large number of firms in this country who belong to the British Standards Institution, and all these firms belonging to the Institution receive regularly draft copies and finally approved copies of specifications, adding from time to time information which may be of use to them. All of us belong to firms who of necessity belong to, shall we say, the Home Office Association. We are all in that Association. The Home Office can go into any of our places of business and make tests and investigations and so on; and it does seem to me that there must be something gained by having a greater publicity department in the Home Office, something which will enable us to have forced on us all the wealth of information it has there and which may be of interest to us.

Mr. Taylor mentioned in the course of his lecture a pamphlet published in October, 1936, by the National Confederation of Employers Organisations. Well, I have that in front of me. As a matter of fact it came on my desk this morning, and it came because I happened to see a reference to it in the Safety First News or something like that. I wrote for it, and I got it this morning, and it was published in October, 1936. It has taken fourteen months to put itself in front of me, and I pride myself in being reasonably up-to-date on news and things that may be of interest to us. It is a very interesting pamphlet on accident prevention for juvenile

workers, and one which I am sure will be of great value to most of you present.

MR. HALLIWELL: Mr. Taylor did not, as far as I remember, give us any information as to how much "let up" we might get on some of the sections of the Act with respect to the tool room. I am personally more interested in that aspect of it than the others, and I feel that whilst it may be thought desirable to be very strict in some instances where guards for machinery are required—especially with semi-skilled and unskilled labour operating under great production pressure—it is a very different case in the tool room. It is almost impossible to operate a tool room efficiently if, shall we say, exaggerated attention or importance is given to the strict interpretation of the Act with respect to guards for milling machines, power presses, and so on especially when we are trying out fixtures, proving tools and that sort of thing.

One other point I would like to raise with respect to hours. At the present time it is a matter of national importance to train as many young men as possible for what I would call the super-skilled trades and crafts, and the country is suffering from a dearth of really skilled men and also of future material under training. It is also impossible to train all the material which we have at our disposal on the exisiting machinery which we have unless we can train some of them at night. Would it not be possible, at the discretion of some senior official, to get some relief in this respect?

I should like to ask everybody to join in a vote of thanks to show Mr. Taylor how much we appreciate the very interesting paper he has given us. He has only read to us parts of his paper, but it gives us considerable food for thought. It is a very interesting subject and its is extremely kind of him to take the trouble to come here and give it to us so ably and reply so considerately to the questions which have been shot at him.

MR. STEVENSON TAYLOR: First of all I should like to thank you very much for the very kind way in which you have received this paper and my remarks. It is a very real pleasure indeed to come to an Institution of Engineers, as before I entered the stormy path of the factory department I was an engineer and still take a very great interest in engineering matters, so that I am not without sympathy with your difficulties.

I would like to tell Mr. Halliwell not only with regard to tool rooms but also with regard to the application of this new Act in general—do not imagine for a moment that the department is going to tumble down on you next July and bring everyone forward into Court because you have not applied all the requirements of the Act. Of course, we quite realise that it must take some time before employers can carry out the provisions of this Act. I think I am

voicing what has already been said by the Home Secretary himself in the House, that the Act will be administered in a reasonable manner. We try to get reasonable inspectors on our staff; we select them very carefully, and we hope they administer the Act reasonably.

But I do not think that there is any provision made in the Act for exemption of machines in the tool rooms. Under some circumstances certain machines in the tool rooms such as milling machines are exempt from the milling cutter regulations, which are made under a provision of the Act. This is one of the codes of regulations dealing with special dangers. Before these codes are issued there are always discussions with the representatives of employers and workmen concerned and it is following these discussions that we get the provisos which allow for special difficulties and in that way exemption, or some let up, is allowed.

With regard to the training of young persons, of course I am quite aware of the difficulty in the matter of specially trained persons, but there is nothing to prevent a person over eighteen years of age from learning at night; it is only women and young persons under eighteen who are prohibited from doing work at night. There is the difficulty with regard to night shifts. Then again, shift work can be utilised for employing young persons over sixteen. This means that they can be employed in two shifts, one from 6-0 a.m. to 2-0 p.m. and the other from 2-0 p.m. to 10-0 p.m.; in that way you have two sets working on the same machine, so that you can make more use of your plant. Before you can employ women or young persons on a two shift system you have to get an order from the Secretary of State but generally speaking if the conditions in the factory are good and suitable and the workers are willing to work on the two shift system there is no difficulty about getting an order.

Discussion, Birmingham Section.

MR. R. H. YOUNGASH: Some six years ago, when I had the honour of sitting in the seat that Mr. Wright is occupying to-night, I reviewed very briefly a few of the Factory provisions, and ventured to suggest that we could look forward to an increasing amount of this sort of legislation. I did not know at that time that it would be so soon, but it is here, and I cannot help but remark that the necessity for such legislation is a disgrace to the employers of the country and a disgrace to the nation. At the same time I feel that England is no worse than any other country in that direction, but it really is an astounding thing that for generations now we have had killed and maimed fellow creatures in large numbers year by year through our own neglect, or more particularly, ignorance, and it is pleasant to know that so much interest is being taken in the new provisions that there will be no longer the excuse of ignorance.

I would, however, like to point out to-night that most of you here have the duty of carrying those provisions into effect, and your biggest problem is going to be not so much in getting safeguards and meeting the provisions of the Act, as it is going to be in maintaining them, and I venture to say Mr. Taylor will tell you exactly what he knows about that particular end of it. Safety devices are installed, and are in their early stages extraordinarily effective, but unfortunately a condition of neglect arises in so many factories and the result of it is that efficient devices become inefficient through lack of proper attention, and that is going to be the biggest problem that you will have to deal with.

I was interested in Mr. Taylor's opening remarks where he mentioned that the lecture itself would take something like three hours, and that Mr. Hazleton insisted on having all of it and went so far as to say he not only wanted the law but the prophets also. I venture to suggest that by the time Mr. Taylor's department has finished with us there won't be any profits!.

I do not doubt for a moment that you all feel that the department which Mr. Taylor represents, like the income-tax department, is one of the least respected Government departments, and it is rather curious that whenever we meet these gentlemen (this is not the first occasion we have had someone from Mr. Taylor's department to speak to us) we find them to be charming, affable, and delightful men.

I would like to recommend to those who have not seen it, the little green pamphlet that is published at intervals. It is a report on many of the accidents that are commonly happening in our own

class of factories, and it is a publication which should be in the hands of everyone who has to deal with matters of this sort.

I feel that the operators in factories have some obligation as well as the owners. It is time something was done in that direction, and whilst I am not in a position to suggest any way in which the information could be passed on to the people concerned, the fact remains that employees of the lower grade require education in their obligations just as much as the higher grade employee who has to administer the provisions of the Act.

MR. STEVENSON TAYLOR: I am sorry that, taken in the lump, we are such a lot of black sheep whilst, individually, we seem to be quite white. It must be an optical illusion. It is quite true, perhaps, that some years ago the staff of the Factory Department was regarded as a kind of industrial police, but I think Mr. Youngash will agree with me that that time has passed and that we are—at all events by the majority of progressive employers—regarded at least as useful advisers, if not as friends.

With regard to the pamphlet Mr. Youngash mentioned, it is issued quarterly by the Factory Department of the Home Office, and contains from 20 to 30 cases in each leaflet dealing with various classes of accident which have occurred. The leaflets are illustrated, and I recommend them to your attention. They are useful because they give you definite advice as to the ways and means of preventing accidents of the classes illustrated.

Mr. Youngash referred particularly to the difficulties of maintenance of guards and of the workers. I did try to draw attention, of course, to the new provision which enables the inspector to deal with the worker, but we do not want to penalise the worker any more than we want to penalise the occupiers of the factory. Our object is not penalties but compliance with the law.

There is a provision at present in the Workmen's Compensation Act, which gives the Home Secretary power to require special safety organisations to be set up in factories. That provision is not actually in force yet, although some few years ago a draft order was made, but following the issue of that draft order which applied to a number of industries which were what one might call heavy accident industries, iron, steel, shipbuilding, and heavy engineering, the representatives of the employers in those various industries came as a deputation to the Home Secretary and promised that they would themselves voluntarily set up such organisations in their works, and on the basis of that promise that order has been suspended. Such organisations have undoubtedly been set up in a very large number of works covered by the draft order, and also in a number of works which were not within that order. There is no doubt, from the experiences of the occupiers themselves and the experiences of inspectors of our department, that in a very large number of

cases these safety organisations have reduced to a very great extent the number of accidents occurring in factories. In our experience, the most successful organisations are those which contain on their Committees, or in connection with their organisation, some of the workers or workers' representatives. The only way to keep your workers really interested in accident prevention is to let them have information as to how accidents occur, and let them go into the question themselves and see how they can be prevented ; this can be done by means of these committees, and where that action has been taken, there has been in some cases a reduction of as much as 50% in the accident rate in individual factories. I would therefore recommend to all here the consideration of this question as to whether you can set up some organisation in your works on which workers are represented so that they can go into the question with you of accident prevention.

MR. F. VERNON WELLER : Referring to the standards of noise and illumination in factories, there does not appear to be any very definite information available to factory executives on subjects of that description. In many instances beneficial results have been achieved by factory executives who have improved conditions in their works. If information of that kind were collated and made available to others undoubtedly it would be valuable and probably would be of use in helping them to come to a decision to improve conditions in their own establishments.

I have personal experience of the removal of noisy machines from one department which immediately improved production by something over 10%, other things being equal.

I am glad the lecturer mentioned machines as delivered from the manufacturer without proper guards. Quite recently the firm with whom I am connected received a new 4-spindle drilling machine without proper spindle guards. A large number of machines of this description are provided with telescopic guards, and these undoubtedly are very much better than the plain front guard which is so often detachable.

Referring to compressed air in factories : this is in general use nowadays, and accidents often occur where young people are in the habit of playing the compressed air nozzle on each other by way of retaliation for little tricks which have taken place previously ; bits of scale from the inside of the pipe being projected at high velocity by the stream of air and entering eyes is often dangerous.

Referring to Mr. Youngash's remarks about the difficulty of getting operatives to make as much use as they should of machine guards after they have been fitted for some little time, I think it is sometimes not so much a question of the guard getting out of adjustment, but of operators seeming to regard the use of a guard as a confession of nervousness, and thereafter showing their disregard

for the necessity of using a guard by pushing it out of the way particularly in the case of milling cutter guards they have to manipulate.

A practice adopted at one works was that of painting all machine guards red. It has the psychological effect of impressing upon the mind of the operator that the guard is not necessarily part of the machine but is a very grave necessity. It also assists the supervisory staff to see if the guard is displaced. I commend that to you for whatever use you may find.

Regarding "Safety First," we found it extremely useful to employ posters which, I believe, are issued by the Safety First Association, illustrating specimen types of accident. A picture of someone doing something which you would never expect to do yourself is sometimes a warning, and posted up in the works where everyone can see it, I suggest would be of use.

MR. STEVENSON TAYLOR: It is true that very little has yet been done with regard to the question of noise, but we have taken up the matter and are illustrating in the Home Office Industrial Museum some of the plant which has been specially installed with a view to preventing noise.

The whole question, as you are aware, is being investigated now by the National Physical Laboratory, and some attempt is being made to find out the effect of noise on workers. It is a very difficult investigation, I understand, to determine how far the noise actually does affect the workers, but I think there is readily available an investigation carried out by the Industrial Health Research Board on the subject that may be of interest to Mr. Weller. I commend and confirm what he has said with regard to the removal of noisy machines.

With regard to illumination, a good deal of work has been done, and there is a pamphlet which has been issued by this Department on the subject of lighting in factories and reports of several committees dealing with the illumination of factories. At the present moment a Committee, of which the Chief Inspector of Factories is the chairman, is investigating the subject. He is away at this very moment in the North of England going into the question, carrying out actual tests and experiments as to the standard of illumination necessary for various industrial processes. No doubt the Home Secretary, on the report of that committee, will issue some regulations with regard to standards of illumination for various processes.

I should like to support what Mr. Weller has said with regard to the use of compressed air in factories. Several very serious accidents have occured through young persons skylarking and directing the compressed air nozzle into the faces of other workers with compressed air pipes.

The suggestion with regard to the painting of machine guards red is a very good one. As a matter of fact that has been done in the Home Office Industrial Museum. You will find that all the guards there are coloured red, and it has also the great advantage that you can notice the guard when it is lying on the ground instead of being on the machine.

MR LANGTON: I think we all agree that this new Act is a big step forward. In any legislation of this kind provision should be definite, so definite that the average employer can understand the requirements of the law.

With regard to the operation of the Act, it is understood that it repeals practically all the Factory Acts which have been passed previously, but it occurs to me that a number of statutory rules and orders have been issued by the Home Office over a number of years. What is the position of these rules and orders? Are they to the same extent repealed, or do they continue until repealed, or is the Home Secretary to issue amended or confirmatory rules before the operation of the new Act?

My second point is with regard to air space for the number of employees, particularly referring to existing factories. I understand a provision of 250 cub. ft. of air per person continues in existing factories for a number of years, but is that provision limited to a height of 14 ft. or is it unlimited as it has been in the past?

The third point I have is with regard to the standard of adequate ventilation. What is adequate ventilation? I suppose in a general way it depends upon the conditions of the factory, but in an ordinary factory where you get one and a half to two air changes per hour, how is the employer to know whether that is adequate, or does it depend on the personal reactions of a particular inspector?

My next point is with reference to stopping transmission machinery. Would an ordinary circuit breaker or switch attached to an electric motor be regarded as effective with a motor driving a line shaft and 10 or 12 machines each with a belt driven pulley? If the current is switched off with an ordinary circuit breaker is that an effective stopping under the Act?

Birmingham is the home of the cold metal rolling trades, brass, copper, and so forth, and from what I know of that class of trade no satisfactory device has yet been invented whereby a rolling mill can be securely fenced.

I understand it that unless machinery can be securely fenced, it must be as safe as if it were securely fenced. Do I interpret that to mean that rolling mills and similar machinery will be out of

operation by June 30 unless proper safeguard can be provided? If so, Birmingham's unemployment will rise extraordinarily!

I still have two other points, the next one being with regard to the sale of plant and the necessity for securely fencing that plant. Does that provision apply to the same extent in the sale of plant as it does when that plant is really put into operation in its working position, referring for instance to the driven and driving belts on, say, a power press, or does it only apply to belts of mechanical construction internally in machines?

The point I really raise there is the fact that a man selling a piece of plant does not necessarily know how and where that plant is to be used, and it may provide him with some difficulty in knowing just how to fence or guard, and what would be otherwise quite safe if it were left unguarded.

Finally I have a little poser. It relates to the question of steam receivers and steam containers. I wondered in what category steam heating pipes, steam radiators, and steam humidifiers would come? Is that class of plant included in the provision, or can that particular kind of plant be excluded from those provisions altogether?

MR. STEVENSON TAYLOR: Firstly, with regard to Mr. Langton's point that provision should be more definite, Mr. Langton must not forget that it is an Act of Parliament; it was not made by the Home Office. If you will compare this Act and the Bill which was originally introduced, you will find some very considerable alterations, and those were made in the House of Commons. If some of the Members of the House had had their way, there would have been many more requirements in this Act. No less than 600 amendments, I think, where discussed when this Bill was going through Committee in the House of Commons, so that I think you will have to accept it as the considered wisdom of your legislature.

I have been invited by Mr. Youngash and Mr. Langton to be a kind of Jekyll and Hyde. I am afraid it is very difficult for me to adopt a dual personality, and I shall have to give you the best advice I can on the points you raise. But I must point out that the interpretation of the Act and provisions of the Act are really in the long run questions for the Courts and not for the Department to which I have the honour to belong. We do our best to advise you, but, as I say, we shall probably have very severe strictures from the law officers if we attempt to interpret the law for you.

With regard to the statutory rules and regulations and those regulations which have been made under the existing Act, there is special provision in the new Act which retains all these in force until

they are repealed so that whatever orders are in force will remain in force. You will find it in Section 159, almost the last Section in the Act.

With regard to cubic space—250 cub. ft.—that really means in existing factories 250 cub. ft. per head calculated as at present holds good for five years, and then at the end of that five years it may still continue if mechanical ventilation is installed—if before the expiration effective and suitable mechanical ventilation has been provided.

I am afraid I cannot help you very much with regard to adequate ventilation. It depends on particular circumstances in each factory. What may be adequate in one case may be totally inadequate in another, and it is a matter which depends on conditions in the works, the nature of the processes carried on, and so on. If you will study that pamphlet which we have issued in connection with ventilation, you will get some guidance there.

Regarding transmission machinery stopping devices, yes, a circuit breaker would be quite adequate. That would effectively stop the machinery in the room. With regard to securely fencing, and "must be as safe as if it were securely fenced," that is the law on the point. The application of the law to individual cases depends on the circumstances in those individual cases.

I take it you are not merely referring to the gears on the rolling mills, but the rolls themselves. That is a question of whether, under conditions of working, it is dangerous; that is the question to be settled. Generally speaking it is a question of whether an accident arises in the normal method of working, so that the decision which I gave you from the High Court was the view that was held.

With regard to the sale of new machinery, I did not give you in detail the wording of the Section, but it requires that "every set screw, bolt, or key on any revolving shaft, spindle, wheel, or pinion shall be so sunk, encased or guarded as to prevent danger; and all spur and other toothed or friction gearing, which does not require frequent adjustment while in motion shall be completely encased unless that is so situated as to be as safe as if it were completely encased."

There again, with regard to the individual machines, I think the responsibility is on the seller to fence all these parts that are mentioned in this section. This section applies to the agent, for instance, of a firm of foreign manufacturers selling machinery in this country. Of course the firm itself could not be dealt with here,

but their agent could be. Regarding steam receivers and steam containers, steam pipes, of course, are expressly rulled out in the definition of steam receiver. The point is, is it a vessel which contains steam under pressure greater than atmospheric pressure? If so, I should say generally that it will be a steam receiver, unless it is an ordinary steam pipe or coil, and if the pressure is approximately atmospheric pressure and there is an outlet to the atmosphere, then it is a steam container and the only requirement with regard to a steam container is that the outlet must be properly maintained so that pressure cannot be built up in it.

I should say that things like straight pipes or coils with fins on, will not be steam receivers, but if such pipes are built up into a structure so as to make an assemblage of it, then I think it will be either a steam receiver or a steam container, according to what pressure is used. That is purely a personal opinion.

MR. ELKINGTON: I heard Mr. Taylor mention that in July all drives to lathes will have to be guarded. The lathes I come into contact with are what are called "cone-drive" which requires operators to handle the belt every time he changes speed. That also applies if you have special machines, particularly on non-production jobs. I am talking about machines where the operator, in the course of his job, has to change the belt with his hands, most of them at speed.

MR. STEVENSON TAYLOR: Of course there is nothing stipulated in the Act itself with regard to those except that it is part of the transmission machinery, transmitting power to the lathe, and therefore should be guarded to meet the requirements of the Act.

A MEMBER: Regarding the washing of floors, I think Mr. Taylor said that floors must be washed once per week?

MR. STEVENSON TAYLOR: There are alternative methods. The Act says they must be cleaned at least once per week by sweeping or other method. With regard to Mr. Youngash's suggestion about a visit to the Home Office Industrial Museum, we should like very much a visit from the members of this Institution.

MR. YOUNGASH: Do I understand that what you have previously called "edible dusts" now come under the same provision as silica and suchlike matters? Is it the recommendation that employees should not be subjected to these dusts at all, or that these dusts should be kept down?

MR. STEVENSON TAYLOR: The existing law gives the Inspector power to require dust to be removed, if it is injurious and if he thinks it can be removed by means of a fan. Under the new Act, Section 47,

it is not limited to dusts which are clearly regarded as injurious such as silica, or asbestos. The general medical opinion is now that any dust, if you have enough of it, does cause ill health, and therefore the section requires that where there is any substantial quantity of dust of any kind, all practical steps shall be taken to protect the persons employed against inhalation. Some wood dusts have been regarded as innocuous in the past, but they must be removed if they are in sufficient quantity. There is another point with regard to this question. Dust explosions can be prevented by removal of the dust in the proper way. I have known several serious explosions to occur through the ignition of ordinary wood dust.

MR. BLACKMORE: Regarding the provision of guards for cutters on such machines as the milling machine, especially when used in the tool room where many changes take place in the course of a day, I think there is plenty of room for improvement in design, so that they can be easily brought into operation. Often guards are provided, to keep within the Act, but they are too cumbersome to fix up and also interfere with the man's vision. If some guard were provided that could safely be brought into operation by just one movement of the hand, I think it would be used much more by tool room men and others who are constantly changing their cutters.

MR. STEVENSON TAYLOR: I quite agree with your remark. I do think that in many cases if a little more thought was given to the designs of guards and facilities for adjustment, very considerable improvement could be effected. It is amazing what great improvements are often carried out once occupiers of factories realise that the use of the guard increases the efficiency of the machine and the output is increased.

MR. KNOWLES: Speaking from the point of view of the supplier of machines, what is the position regarding being reponsible for guarding the drive to a machine? Take, for instance, the ordinary grinder with a post and a lot of tools on the spindle. Is the supplier responsible for the preparation of a guard to that drive when he does not know from what angle the drive is going to be run? It may be run from under the floor, it may be horizontal, it may be vertical.

MR. STEVENSON TAYLOR: I thought I had dealt with that point just now when I mentioned that the requirements in this Section 17 specify certain parts that must be guarded. The belt drive is not mentioned.

MR. CRUMB: Is there any age limit, particularly in a plating department, with reference to young persons manipulating dangerous acids or liquids?

MR. STEVENSON TAYLOR: No, no age limit.

MR. CANNAN: I am sure it has been a most instructive and interesting lecture, and I think we have quite a lot to be thankful for in the Factory Act, particularly with regard to the employment of young persons. I notice with pleasure that there is going to be enforcement of training of young persons in the use of their machines. I would also suggest that a certain amount of training is given to young persons in the Factory Act. I think it would be a very good starting point of their careers as engineers.

I am very disappointed in the Factory Act generally that it is so ambiguous with regard to the various statements, "competent persons," and various other things, and it seems to me that there is too much of this "leave it to the judge and jury" sort of style. When accidents occur you suddenly realise who a "competent person" is.

With regard to exhaust fumes from internal combustion engines, I suppose a petrol truck would come in under this new Act. We use a petrol truck in our works, but it seems to me we are debarred from using that under this new Act! I am very pleased to see that some of the onus with regard to guarding machinery is placed on the manufacturer. I should go further than that and make him issue a certificate or warranty that it has passed the Inspector.

I am also interested in lifting tackle. I should like to know how we are to give this periodic examination to such things as endless wire ropes and hemp ropes if we cannot identify them? I have never yet come across any sound means of identifying a hemp rope. It is no use examining a lot of ropes if you do not know which particular rope you are examining. Finally I would like to conclude by thanking Mr. Taylor for coming here tonight, and I am sure that everybody will join with me in extending to him a very hearty vote of thanks.

MR. STEVENSON TAYLOR: With regard to the petrol electric truck, the provision under the Act only applies to stationary internal combustion engines.

With regard to lifting tackle, the system that has been adopted both in connection with endless wire as well as endless hemp ropes is to put on a small copper ring with a number and letter. That system is adopted in quite a few big works and particularly those

of railway companies, and it is quite simple. The same provisions apply to strops of wire used for lifting purposes in connection with loading and unloading ships for a number of years. There has not been any difficulty about the question of identification. I think you will find a small copper ring brazed on the endless rope will enable you to identify it.

Discussion, Manchester Section.

MR. WALMSLEY: Some years ago, I was invited to attend a luncheon in the Midland Hotel, Manchester, and the principal speaker opened his remarks by saying that ever since the days of Adam, every Act of Parliament which had been passed in this country had started with the words "Thou shalt not." In other words, Acts of Parliament were restrictive in their operation, and also imposed obligations on those concerned. The object of the new Factories Act may be summed up in one sentence, the protection of the workers in industry, and to achieve this object, a considerable number of obligations have been imposed on employers of labour, or, as Mr. Taylor would say, occupiers.

We have therefore to ask ourselves this question: Are these restrictions and these obligations unreasonable? In my opinion, after carefully considering the position in a comprehensive manner, they are *not* unreasonable for this reason—we have been told, and I believe the statement to be true, that there is nothing in the new Act which has not already been adopted as good practice, by the best type of employers.

At the same time I must admit that on the first reading of the new Act, one is appalled at the requirements of the 160 sections—the Act appears to be quite a fearsome document— but as you get closer to it, and try to appreciate the reasons underlying these requirements, the difficulties decrease.

I do not propose to enter into any detailed criticism of the various clauses of the new Act, but merely to content myself with two criticisms and two observations of a general character.

First, with regard to Section 17—the construction and sale of new machinery—this section introduces an obligation on the part of the makers and sellers of machinery long overdue. For the first time, it is illegal to sell a new machine which has certain parts exposed which may lead to accidents. Setscrews and keys must be sunk or encased: and toothed wheels must be covered. But it is still legal to sell machines where there is danger to life and limb, and in my opinion, Mr. President, the section does not go far enough. I would like this clause to be so worded that all new machinery should be protected so as to comply with the requirements of the new Act before any sale could be effected.

The second criticism I have to make is that the full effect of the new Act will not be felt for many years, because a very considerable number of restrictions will be imposed from time to time by regulations issued by the Secretary of State. This method is known as "Legislation by Regulation," and is open to objection. In my opinion, it is preferable that restrictions and obligations which have

the weight of the law behind them should be settled by Parliament, rather than be introduced by a Secretary of State by way of regulations.

One of the observations of a general character I wish to offer is this —that while we welcome legislation which tends to benefit the general body of the people, social legislation as it is called, there is a danger—a serious danger. This danger is that the responsibility of the individual worker is lessened, and that the good old spirit of British independence of thought and action is in danger of being sapped. Generally speaking, the more that is done for people, the less will they do for themselves. I have been in industry for over thirty-five years, and have noticed a distinct change in the mental outlook in the way of expecting others to accept responsibility for all manner of things. I believe that those who have also been in industry for a considerable period will agree with me. To take away this sense of responsibility from the individual, and to make it unnecessary for him to exercise his independence of thought and action is bad for us as individuals and bad for us as a nation.

My other observation is this—the number of offences which an employer may commit under this new Act are legion. On the other hand, it is not being brought home to the workers that they have obligations also, for the contravention of which penalties should be provided. I am aware that Section 119 brings in a new provision regarding the duties of persons employed, and personally, I shall be very interested to see what action is taken by His Majesty's Inspectors under this section. We know that the workers, through their trade unions, are endeavouring to secure a greater measure of control of industry, and it is only equitable that responsibility and obligation should march together.

Mr. Stevenson Taylor : I do not think Mr. Walmsley can have it both ways. He complains that Section 17 does not go far enough, but Section 17 contains what he objects to. When you have a general Act of Parliament which has to cover ground ranging from the dressmakers' workroom to a Vickers Armstrong shop you cannot put in it all the requirements that you wish to do, and the only way to get detailed requirements is by means of regulations. There is a good deal to be said, after all, for regulations, because you are going to impose detailed requirements on a detailed industry, and in that way that industry is concerned. If you are going to have useful legislation it must be detailed. One complaint I had at a previous meeting of this Institution was that the requirements are too vague and general, and that is remedied by regulations.

Regulations lay down detailed requirements. Further, regulations provide an opportunity both for employers and the works' representatives to discuss the practicability of such requirements as may be put forward by the Home Office, and as a result we do find,

generally, that we can come to some measure of agreement before these regulations are imposed on the factories. After all, that is a great step to getting these requirements carried out. Before the War nearly always these regulations were thrashed out before an arbitrator. Since the War we have only had one case where regulations have been dealt with in that way, and I have been told by the representative of the employers that they wished they had never gone before the arbitrator. They would rather settle it round the table. There is a good deal to be said for regulations when it comes to detailed requirements.

I am not going to be drawn into a political discussion with Mr. Walmsley regarding the shortcomings of the workers. There is a penalty fixed on the worker as on the occupier if he commits a breach of this Act.

MR. CROOKE: As Mr. Stevenson Taylor has said, an Act which covers such a wide field must be necessarily vague. What I am in doubt about is Section No. 137, and the Safety Act, part 2, which refers to guarding. With some machinery it is a very complicated mechanism and even after guarding a machine there is nothing to prevent a man stepping up a ladder he should not have gone up, and which cannot be guarded, so what is going to happen there? When an employer has done his best to guard a machine satisfactorily and an accident occurs through gross carelessness, the Secretary of State will be in a position to say you should not have guarded it in that way, but will not give a line as to the satisfactory method of guarding. Are we likely to get any assistance in that quarter? I should like your opinion on that.

MR. STEVENSON TAYLOR: I do not quite know what Mr. Crooke expects me to say in answer to that. If he refers to Section 17 he will find that Section 17 requires certain very definite parts to be fenced or encased. If a maker sends out machinery fenced as far as he or his experts think complies to that requirement, then, of course, it is a matter of whether his opinion coincides with that of a suer, and I think it may ultimately be a matter for the Courts. That is the only way in which it can be settled finally. Any proceedings that are taken under this Act have to be taken within six months of committing the offence, so that if the manufacturer of machinery has not been proceeded against in that time nothing will happen.

MR. LESLIE: I would like to ask a question in regard to the elaborate provisions made in this Act respecting shafting and belting. Is there no provision in this Act which projects over ten years, eliminating shafting and belting? I should have thought in these days of electrical drives that within ten years there would be complete elimination of all shafting and belting. Another question: are any means being taken to reduce noise in regard to fatigue?

MR. STEVENSON TAYLOR: It is fairly evident that Mr. Leslie is not a manufacturer of shafting! We do not do it so harshly as Mr. Leslie would like to see it done. We do it gently by means of regulations.

With regard to noise, there is no provision in the Act. As you are probably aware inquiries are being made now and some inquiry has been completed in fact dealing with the effect of noise, but it is a very difficult subject to determine how noise affects the efficiency and wellbeing of the worker. Until we have some much more definite information than at present, I think you will probably be complaining if we put it in legislation.

A MEMBER: Is it necessary to fence new machinery which is undergoing a running test? Running on the test bench?

MR. STEVENSON TAYLOR: No, it is not legally required. The machinery is not in use in the factory, but you will be well advised to fence it all the same.

MR. PUCKNELL (Section President, who presided): As defined by this Act, fencing must be of material structure. Whilst in Germany a fortnight ago I saw one of the German sheet metal cutting machines, a guillotine, and along the front of this guillotine there is a photo-electric cell circuit, so that if the operator projects his hand or hands into this circuit it automatically stops the machine. Under this Act, would that be regarded as an effective and sufficent guard?

MR. STEVENSON TAYLOR: It has been tried by several firms in this country, but it is not definitely decided by the Courts whether it is secure fencing. It has this serious disadvantage—one can reach over it or under it. It is very useful for certain purposes but the one or two works in which it was tried have not relied on that and that alone. They have put in some form of material fencing as well.

MR. CRANMER: With regard to rotating stack bar in which the work is being produced, has that to be guarded? With regard to the fencing and proper guarding of gears and so on, is that to be enforced for all imported machines as well as home produced?

MR. STEVENSON TAYLOR: The Section requires the fencing of stack bars and lathes, that is, tail ends of the bars must be covered up. It is general practice now and is certainly done by all the best people! Quite a number of machine tool makers provide very excellent guards for stack bars and tail ends of their lathes.

With regard to your second point, the obligation to fence or guard imported machines, if a firm imports a foreign machine directly without the intervention of any agent, they themselves are responsible as occupiers of the factory that they comply with section 17, and the other provisions with regard to fencing dangerous parts.

A MEMBER : One can see there is going to be quite a lot of controversy between the machine tool manufacturer and the user as to where the manufacturer's responsibility ends and the user's responsibility begins. For instance, in the particular case of a milling machine, is it the manufacturer's responsibility to provide a guard to the milling cutters or the user's responsibility ?

MR. STEVENSON TAYLOR : The user's responsibility. The cutter is not mentioned in Section 16.

MR. PEARCE : I should like to know if this Act covers the South of Ireland or the North of Ireland.

MR. STEVENSON TAYLOR : The Act does not apply to Ireland, North or South. Northern Ireland will probably get an Act of their own very shortly similar to this Act. They usually follow our legislation step by step. Southern Ireland claim they had a first rate Act covering all these things before this came into force.

A cordial vote of thanks to the lecturer concluded the proceedings.